VOLUME 26
NUMBER 6

Journal OF THE American Dietetic Association

Publishing Office
Mt. Royal and Guilford Aves.
Baltimore 2, Md.

American Dietetic Association
620 N. Michigan Ave., Chicago 11, Ill.

CONTENTS, JUNE 1950

ACADEMICIAN I. P. PAVLOV—A CENTENNIAL—*Helen S. Mitchell*, Ph.D. 409

EFFECT ON EATING HABITS OF NUTRITION EDUCATION IN THE FIFTH GRADE—Determination by Photography—*Faye Woodward Grant* 413

NUTRITION IN RELATION TO DISEASE OF THE HEART AND BLOOD VESSELS—*G. E. Wakerlin*, Ph.D., M.D. 417

NUTRITIONAL STATUS OF CHILDREN. X. Feeding Practices in Child-Caring Agencies: Communal Feeding of Adolescent Boys—*Marcia Ward, Irma Hawley, Ruth Uhler Thomas, and Hazel Metz* 421

EMOTIONAL FACTORS IN EATING AND OBESITY—*Spencer Bayles and Franklin G. Ebaugh* 430

A PATTERN FOR PLANNING CURRICULUM—*Hilda Taba, Bonnie F. Beilfuss, Charlotte Ludwig, and Evelyn L. Pearson* 435

EDITORIAL

Lulu Graves' Bequest to A.D.A. Loan Fund 439

Washington Welcomes You to the Convention 439

CURRENT COMMENT

A Practical Approach to Employee Training—*Agnes B. Cassity* 440

BOOK REVIEWS 446

CURRENT LITERATURE 448

NEWS NOTES 460

The Journal of the American Dietetic Association is published monthly by the American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., and 620 N. Michigan Ave., Chicago 11, Ill. Neither the Association nor the Editor assumes responsibility for the opinions expressed by authors of papers abstracted, quoted, or published in full in this Journal.

Subscriptions: Rate $5 per year. Special rate to undergraduate students and dietetic interns, $1.50 per year, if order is approved by head of the department. Single copies, 75 cents. All correspondence concerning Journal subscriptions, orders for copies, or reprints from the Journal, and notices of change of address should be sent to the American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., or 620 N. Michigan Ave., Chicago 11, Ill. Notices regarding change of address should reach the publisher two weeks before the date of issue on which the change is to take effect and both old and new addresses should be given.

Editorial Correspondence: All articles and notices for publication, general correspondence, and inquiries should be sent to the Editor at the American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Manuscripts are accepted for publication on condition that they are contributed solely to the Journal. Copy must be double-spaced and original, not carbon, submitted.

Advertising: All correspondence concerning advertising should be addressed to the American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

COPYRIGHT, 1950, BY THE AMERICAN DIETETIC ASSOCIATION Printed in U.S.A.
Entered as second-class matter June 30, 1925 at the Post Office at Baltimore, Md., under the act of August 24, 1912
Published monthly by The American Dietetic Association

OFFICERS, 1949–1950 AMERICAN DIETETIC ASSOCIATION

Headquarters of the Association: 620 N. Michigan Ave., Chicago 11

Coordinating Cabinet

EXECUTIVE BOARD

President, ELIZABETH PERRY, City Hospital, Cleveland, Ohio
President-Elect, LILLIAN STORMS COOVER, 2121 Hughes Avenue, Ames, Iowa
Vice-President, FERN W. GLEISER, School of Business, University of Chicago
Secretary and Chairman, Membership Committee, MARGARET A. OHLSON, Michigan State College, East Lansing
Treasurer and Chairman, Finance Committee, WINIFRED H. ERICKSON, Ancker Hospital, St. Paul, Minnesota

SECTION CHAIRMEN

Community Nutrition, to be appointed
Diet Therapy, MARGUERITE L. PETTEE, Medical College of Virginia, Richmond
Food Administration, MARION D. FLOYD, Hospital Division, U.S. Public Health Service, Washington, D. C.
Professional Education, ERCEL S. EPPRIGHT, Iowa State College, Ames

COUNCIL OF THE HOUSE OF DELEGATES

Speaker of the House of Delegates, FERN W. GLEISER, School of Business, University of Chicago
LUCILLE M. REFSHAUGE, Secretary of Council, Hartford Hospital, Hartford, Connecticut ..... 2 years
HELEN L. GILLUM, University of California, Berkeley, California ..... 2 years
ALTA B. ATKINSON, Teachers College, Columbia University, New York City ..... 1 year
ALICE H. SMITH, Michigan State Department of Health, Lansing ..... 1 year

Staff

Headquarters Office

To be appointed, Executive Secretary
MILDRED L. EGEBERG, Business Manager
MABLE MACLACHLAN, Educational Director
VERNA A. MCKINLEY, Placement Bureau Director
THELMA POLLEN, Public Relations Director
MARGARET L. ROSS, Professional Activities Director
DOROTHEA F. TURNER, Editor, Journal
HARRIET E. SANKEY, Managing Editor, Journal
MARGENE WAGSTAFF, Publications Assistant
MARY ELLEN JOHNSON, Assistant to Educational Director

ADVISORY BOARD

WENDELL F. GRIFFITH, Ph.D., University of Texas, Dept. of Biochemistry, Galveston 1950
JAMES W. SHERRILL, M.D., The Scripps Metabolic Clinic, La Jolla, California 1951
FRED G. CARTER, M.D., St. Luke's Hospital, Cleveland Ohio 1952

JOURNAL BOARD

E. NEIGE TODHUNTER, University of Alabama, University .. 1950
MARTHA NELSON LEWIS, Ohio State University Hospital, Columbus 1950
CLARICE GULLICKSON, Veterans Administration, Washington, D. C. 1950
CORINNE ROBINSON, 90 East Stewart Avenue, Lansdowne, Pennsylvania 1951
ICIE MACY HOOBLER, Children's Fund of Michigan, Detroit. 1951
MARGUERITE J. QUENEAU, Department of Health, State of New York, Albany 1951
MIRIAM LOWENBERG, Rochester Child Health Institute, Rochester, Minnesota 1952
LEVELLE WOOD, Ohio State University, Columbus 1952
DORIS JOHNSON, Department of Home Economics, University of Wisconsin, Madison 1952

PLACEMENT BUREAU BOARD

E. EVELYN SMITH, University of Illinois, Urbana 1950
BERTLYN BOSLEY, North Carolina State Board of Health, Raleigh 1950
ELIZABETH COLE, Mountainside Hospital, Montclair, New Jersey 1950
EDNA GILBERT, Board of Education, Youngstown, Ohio 1951
ELIZABETH HAYWARD, Las Encinas Sanitarium, Pasadena, California 1951
ELLA M ECK, University of Chicago Clinics, Chicago 1951
FRANCES A. SWENSON, Elizabeth Steel Magee Hospital, Pittsburgh, Pennsylvania 1952
BEATRICE HUGHES HOFSOMMER, Harding Restaurant, 21 South Wabash, Chicago 1952
LUCILLE BACKEMEYER, Residence Halls for Women, University of Nebraska, Lincoln 1952

INVESTIGATION BOARD

FLORANCE B. KING, University of Vermont, Burlington 1950
ETHEL A. MARTIN, National Dairy Council, Chicago 1951
FLORENCE IMLAY, 132 State Street, Lexington, Kentucky 1952

BOARD AND COMMITTEE CHAIRMEN

Awards, Scholarship and Loan Fund, P. MABEL NELSON, Iowa State College, Ames
Constitution, HELEN S. MITCHELL, University of Massachusetts, Amherst
Convention, ANNE STEWART MILLER AND JEAN CROOKS, Washington, D. C.
Educational Exhibits, MARY REEVES, U.S. Social Security Board, 188 W. Randolph St., Chicago
Finance, The Treasurer, LUTE TROUTT AND HELEN VOLK.
History of A.D.A., ANNA BOLLER BEACH, National Live Stock and Meat Board, Chicago
History of Nutrition and Dietetics, E. NEIGE TODHUNTER, University of Alabama, University
Legislation Information, MARGERY VAUGHN, 1321 S. Arlington Ridge Road, Arlington, Virginia
Nominating, LUCILLE M. REFSHAUGE, Hartford Hospital, Hartford, Connecticut
Publications, VIVIAN M. ROBERTS, Ohio University, Athens
Public Relations, REGINA G. FRISBIE, Kellogg Company, Battle Creek, Michigan
Vocational Guidance, JEANETTE V. HAMLIN, Rochester Child Health Institute, Rochester, Minnesota

STATE DIETETIC ASSOCIATIONS AFFILIATED WITH THE AMERICAN DIETETIC ASSOCIATION

ALABAMA: *President*, Mrs. Lorene Grant Smith, 1128 So. 22nd St., Birmingham, Alabama
ARIZONA: *President*, Dr. Jessie Rannels, Arizona State College, Tempe, Arizona
ARKANSAS: *President*, Mabel Herendeen, Veterans Hospital, North Little Rock, Arkansas
CALIFORNIA: *President*, Dr. Helen L. Gillum, University of California, Berkeley, California
COLORADO: *President*, Mabelle V. Williams, 710 Jasmine, Denver, Colorado
CONNECTICUT: *President*, Lucille M. Refshauge, Hartford Hospital, Hartford, Connecticut
DELAWARE: *President*, Jane E. Neal, Wilmington, General Hospital, Wilmington, Delaware
DISTRICT OF COLUMBIA: *President*, Mrs. Anne Stewart Miller, 3330 N. Albemarle, Arlington, Virginia
FLORIDA: *President*, Mrs. Dorothy T. Garrett, Veterans Administration, Bay Pines, Florida
GEORGIA: *President*, Gertrude McDonald, Lawson Veterans Hospital, Chamblee, Georgia
IDAHO: *President*, Mrs. Marion R. Johnson, Box 995, McCall, Idaho
ILLINOIS: *President*, Mrs. Mary McKittrick Byrnes, Mercy Hospital, 2537 S. Prairie, Chicago, Illinois
INDIANA: *President*, Mrs. Kathryn Sheedy, City Hospital, Indianapolis 7, Indiana
IOWA: *President*, May Morris, 4324 Franklin Avenue, Des Moines, Iowa
KANSAS: *President*, Mary L. Smull, Kansas State College, Manhattan, Kansas
KENTUCKY: *President*, Mrs. Helen Koons Smits, Massie Memorial Hospital, Paris, Kentucky
LOUISIANA: *President*, Mrs. Frances A. Halbert, 2004 Tulane Avenue, New Orleans, Louisiana
MAINE: *President*, Mary E. Morse, Eastern Maine General Hospital, Bangor, Maine
MARYLAND: *President*, Sybil J. Bangs, West Baltimore General Hospital, Baltimore, Maryland
MASSACHUSETTS: *President*, Alice M. Fenno, Harvard University, School of Business Administration, Boston, Massachusetts
MICHIGAN: *President*, Onalee Hostetler, Grace Hospital, Detroit 1, Michigan
MINNESOTA: *President*, Alice Biester, School of Home Economics, University of Minnesota, St. Paul 1, Minn.
MISSISSIPPI: *President*, Margaret Pettyjohn, University, Mississippi
MISSOURI: *President*, Mrs. Marie Harrington, 4030 Chouteau Street, St. Louis, Missouri
MONTANA: *President*, Marion Kelly, Murray Hospital, Butte, Montana
NEBRASKA: *President*, Lucille Backemeyer, University of Nebraska, Lincoln, Nebraska
NEW HAMPSHIRE: *President*, Clara F. Watkins, Franklin Hospital, Franklin, New Hampshire
NEW JERSEY: *President*, Elizabeth McHugh, American Red Cross, 232 S. Harrison St., East Orange, New Jersey
NEW MEXICO: *President*, Doris M. Barker, University of New Mexico, Albuquerque, New Mexico
NEW YORK: *President*, Meredith Jones, 1320 York Avenue, New York, N. Y.
NORTH CAROLINA: *President*, Delilah H. Siler, Rex Hospital, Raleigh, North Carolina
NORTH DAKOTA: *President*, Mrs. Dorothy Revell, 1450 Eighth Street, South, Fargo, North Dakota
OHIO: *President*, Gladys L. Mason, Huron Road Hospital, East Cleveland, Ohio
OKLAHOMA: *President*, Mrs. Mary Gray Butler, 1931 N.W. 16th Street, Oklahoma City, Oklahoma
OREGON: *President*, Betty Jane Bolton, Salem General Hospital, Salem, Oregon
PENNSYLVANIA: *President*, Evelyn A. Carpenter, Philadelphia Hospital for Contagious Diseases, Philadelphia, Pennsylvania
RHODE ISLAND: *President*, Ruth B. Mather, Rhode Island Hospital, Providence Rhode Island
SOUTH CAROLINA: *President*, Mrs. Emily V. Lee, Apt. C-12C Carovets, Columbia, South Carolina
TENNESSEE: *President*, Anna L. Carpenter, Court House, Chattanooga, Tennessee
TEXAS: *President*, Florence Langford, Box 2376, T.S.C.W. Station, Denton, Texas
UTAH: *President*, Jo Beth Johnson, 132 University, Salt Lake City, Utah
VERMONT: *President*, F. Aline Gravel, Mary Fletcher Hospital, Burlington, Vermont
VIRGINIA: *President*, Margaret Fitzhugh, 407 N. 12th St., Richmond, Virginia
WASHINGTON: *President*, Mildred Bonnell, 204 Raitt Hall, University of Washington, Seattle, Washington
WEST VIRGINIA: *President*, Ona F. Stinson, McMillan Hospital, Charleston, West Virginia
WISCONSIN: *President*, Iva Welch, Brokaw Hall, Lawrence College, Appleton, Wisconsin
HAWAII: *President*, Lorene Kulas, St. Francis Hospital, Honolulu, Hawaii

Academician I. P. Pavlov--A Centennial[1]

HELEN S. MITCHELL, Ph.D.

Dean, School of Home Economics, University of Massachusetts, Amherst

THE dynamic personality of Professor Pavlov, who at eighty-seven presided at the 15th International Physiological Congress in Russia in 1935, impressed all of us who saw and heard him. "Academician Pavlov" was the title by which he was addressed. He died the following winter in February, 1936, following an attack of the grippe. The first opportunity many of us in this country had had to meet this man whose name had long been familiar to students of physiology had occurred twelve years earlier in 1923, when he visited the United States. He was here again in 1929 to attend the 13th International Physiological Congress held at Harvard University.

Pavlov had many friends, former students, and admirers in this country. Two former students who had the privilege of knowing him both as teacher and as friend have been the source of some of the intimate details in this paper. Professor Peter Karpovich of Springfield College, Springfield, Massachusetts, said in a newspaper article at the time of Pavlov's death (1):

> Since the days of Leo Tolstoy, hardly any other living Russian, not connected with politics, had attracted so much attention as did Pavlov. Different as they were, they had much in common. They were as two flaming torches placed at a distance from each other, lighting new ways into the darkness of the unknown. Tolstoy was an expression of the mystic search for truth, Pavlov was an exponent of the realistic, scientific search.
>
> Physiologists of the world acclaimed Pavlov as their dean, and as far back at 1904, he was awarded the Nobel prize for his discoveries in the physiology of digestion. Psychologists revered him as a genius who blazed a new trail for the investigation of the function of the nervous system. Even sociologists and political leaders found Pavlov's work helpful for the clarification and understanding of events occurring in the behavior of masses.
>
> Fundamental as his contributions to science are, Pavlov was great not only as a scientist. His numerous pupils knew him also as a great teacher, not a scholastic clerk who stuffed the brains of the students with material necessary for the passing of an examination, but a great leader of thought, inspiring and stimulating.
>
> And those who knew him intimately remember him as a truly great man with a simple unassuming nature. He was not a cold thinking machine but a sympathetic man with warm feelings; a man who lived every minute of his life, and not merely acted and posed.

Pavlov was born on September 27, 1849—one hundred years ago—in Riazan, Russia, south of Moscow. His father was the priest of the city. In early youth Pavlov received a religious education at the seminary of Riazan, but he was not destined for the priesthood. The philosophy he studied at that time, however, influenced his later work and attitude toward helping his fellowman.

From the seminary he entered the University of Petrograd where he studied chemistry and physiology. After the University he spent four more years as a medical student at the Military Medical Academy, completing his studies there in 1879 at the age of thirty.

While still a student he spent a summer in Breslaw, Germany, working in Rudolf Heidenham's laboratory and later spent two years in Germany studying under Heidenham at Breslaw and under Carl Ludwig at Leipsig. Thus, experience outside his own country broadened his horizon in a way impossible for Russian scientists today. His field of work and techniques were greatly influenced by these two eminent scholars and teachers. His first publication in 1879 described his original method for establishing a pancreatic fistula, keeping the nerve supply intact —an improvement over the then accepted method of his teacher, Heidenham.

The next ten years he spent as assistant in the physiology laboratory of the Military Medical Academy during which time he published a number of papers. During the 1880's, his investigations were on the heart and circulation, particularly the innervation of the heart and other abdominal organs. While studying the influence of the vagus nerve upon the process of secretion of the gastric gland, he developed his method for obtaining gastric juice from dogs—the famous "sham-feeding method." The results of these experiments were so interesting and promising that he turned his entire attention to the nerve physiology of the digestive organs.

The esophagial fistula in dogs became standard technique in his laboratory and in those of his stu-

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 12, 1949, at a session commemorating the birth centennials of I. P. Pavlov, Johan Q. C. T. Kjeldahl, and Sarah Tyson Rorer.

dents and others. It is described in Garrison's *History of Medicine* (2):

> . . . he severed the dog's esophagus in such wise that swallowed food might be discharged at the upper opening, and unswallowed food ingested into the stomach at the lower. Three sets of experiments were then possible: the dog might be allowed merely to see or smell the food, a Barmecide feast which Pavlov called "psychical feeding"; or, the animal might chew the food which passed through the esophageal opening, constituting a sham meal (Scheinfutterung); or, a true feeding might be obtained by introducing the food through the lower stoma of the esophagus. In the first two instances, the effect of smell, sight, taste, chewing, and swallowing was such that a copious and continual gastric secretion—as much as 700 cc. in five or six hours—was obtained without the introduction of any food into the stomach. Pavlov called this effect a "psychical secretion." He next showed that severing the splanchnic nerves does not affect the phenomenon, but section of both vagi will abolish the reflex secretion, and direct stimulation of the peripheral ends of the cut vagi will, after a short interval, produce it again. This proved that the gastric secretion is regulated by the vagus. Under the third condition set by Pavlov, more mechanical stimulation of the stomach by the introduction of food through the esophageal opening, while the dog is asleep or inattentive, does not necessarily stimulate secretion, contrary to accepted opinion. Chischin, Pavlov's pupil, found that, when the psychical stimuli are shut off in this way, the amount of secretion varies with the kind of food, being positive for meats and peptones generally, and negative for other substances, which, when eaten, might cause a psychical secretion. By means of a special pancreatic fistula, Pavlov was able to indicate that the secretory fibers of the pancreas are in the vagus nerve.

In further work by his pupils (Boldyreff *et al.*, using Pavlov's technique), the degree of chemical stimulation derived from a variety of foods was tabulated. Other pupils of Pavlov established by classic experiments that acid from the gastric juice stimulates the flow of pancreatic juice in the intestines, probably through a hormone control; that pancreatic juice from a fistula acquires a powerful proteolytic action from contact with the duodenal membrane or its extract, the enzyme which was called "enterokinase" by Pavlov and his school in 1899. These are familiar statements still found in most physiology texts today—the findings may have since been refined, but the basic theories were sound.

Quite as important as his findings was Pavlov's meticulous attention to every detail of method and technique. Pavlov's later work on "conditioned reflexes," first published around 1912, was instigated by his earlier observations on the importance of the relation of the brain and nervous system to digestive functions. He studied in great detail the influence of appetite and hunger, cooperating and opposing influences on the work of the digestive glands. Then he went on to study the effect of specific sensory and psychic stimuli on reflex actions showing that a musical tone, a bright color, a strong odor, or a skin stimulus will, if associated with the sight of food, cause salivation, but that the flow of saliva at the sound of a given note will cease if the note is raised or lowered *even by a quarter-tone.*

From 1891 until his death in 1936, Pavlov was Professor at the Military Medical Academy, and Director of the Institute for Experimental Medicine in Petrograd. By his 150 advanced students he is remembered as a great teacher and friend. By the rest of the scientific world he is known for his contribution to the physiology of digestion already mentioned and for his later work on "conditioned reflexes."

Boldyreff, who remembered him as his teacher before the revolution (3) says:

> His lectures almost always included demonstrations. He showed his students his methods of operating and let them see how the results were obtained. No lecture was without its experiments, and these experiments had been patiently tried over and over again before an attempt was made at demonstration to students. Failures and mistakes in demonstrations at the lectures were absolutely forbidden. Pavlov is a very skillful operator. Setchenoff, who knew well all the famous physiologists of his day, said that Claude Bernard had been the first vivisector in Europe and that Pavlov is now the greatest of them all. Pavlov is an eloquent speaker, but in his lectures to students much more stress is placed upon the demonstrations. He is one of the most popular professors in all Russia and has had as students in his laboratory many men who have since become well-known scientists.
>
> He has formulated three rules which he maintains are a necessary foundation in physiological studies: (1) that is it necessary to carry on experimental work on normal, healthy animals, not merely on those poisoned or dying by vivisection; (2) that it is a prerequisite to a proper investigation of any organ previously to perform an operation which will render it easily accessible; (3) that the normal functioning of an organ must be observed after the animal has fully recovered from the operation. Pavlov invented for the study of the physiology of digestion a series of separate operations on the different organs (fistula of pancreas, combination of esophagotomy with gastric fistula, the isolated stomach, etc.) Then he combined these separate operations into a perfect and complete physiologic surgical method. He perfected the technic of this method, studying in minute detail all possible modes of investigation.
>
> By means of his system of control experiments, using for subjects healthy animals so that the organs to be studied do not lose their normal physiologic character, and through frequent repetition of the same experiment on many different animals, Pavlov created a real physiology of digestion, discovering the fundamental laws governing the activity of the salivary glands, the stomach, the pancreas, the liver, and the intestinal glands. In connection with this work, much time and labor were consumed in freeing the scientific field from various weeds which polluted it, especially in overcoming harmful scientific prejudices.

His former pupil, Peter Karpovich, has said of Pavlov in 1936 (1):

> I met Professor Pavlov about twenty-two years ago. He was then already a grand old man of sixty-four. Some teachers at his age lecture just by inertia, coming to life only when recollecting some incidents from their youth, or referring to the chicken farm on which they will live after retirement. Pavlov was different. Always

full of energy, he lectured in a manner that resembled mental moving pictures. Sometimes in stating a problem he would ask us to suggest a method of solution. He would wait for a short time, then get impatient, and would start lashing us with not very complimentary statements as to the kind of brains in our possession. Although sometimes we were annoyed at this, nevertheless all was forgiven when someone would succeed in making a proper suggestion and Pavlov would then flatter him, saying, "I think you have brains."

His profound physiological concept of life has been clearly revealed to us on many occasions.

After the first days of joyful celebration of the passing of the old regime and the coming of the new revolutionary government, it became apparent that the masses of the people were too unruly for any rationally organized action. We were losing our optimism and were asking ourselves: "What will it lead to?" Once we asked Pavlov this question.

He stroked energetically his mustache and beard and then said abruptly: "So you are wondering! You are dissatisfied. You should not just keep on wondering, or remaining surprised. Think, reason. Have you ever thought that their behavior might be a natural and logical one, inevitable as a result of various conditions? Should you be surprised when you hear a dog bark and a horse neigh? These are physiological normal things. You know very well that the old regime has been exercising its inhibitory power too much. In later years, during the war, the yoke of the military prohibitions became almost unbearable. From physiology you should know that over-stimulation of inhibitors leads to their paralysis, and all restraining power disappears. Parents who say 'don't' to their children too often drive them into hypocrisy and delinquency. The same is happening now only on a very large scale."

Pavlov always enjoyed a joke, even when it was played on himself. A. V. Hill tells a story (4) about Pavlov on the occasion of his being at Cambridge, England, in 1915 to receive an honorary degree.

> The students of physiology at that time knew his name very well in connection with his work on digestion. They thought they would have to do something to improve the occasion of the degree-giving. They went to a toyshop and bought a large and life-like dog, which they proceeded to decorate with rubber stoppers, glass tubes, pieces of rubber tubing, and any other physical, chemical, or physiological appliance that they could think of. They took it to the Senate House and suspended it from gallery to gallery by a long string. As Pavlov walked away, having received his degree, they let it down to him on the string. He was highly delighted, took the dog from the string, and carried it away under his arm. For many years he kept that dog in his study in Leningrad.

These and other incidents show his point of view, his sense of humor, his industry, hobbies, and generosity. Boldyreff tells us more of his family life and personal habits, as he remembered him before 1917 (3):

> His habits of life are orderly, and punctuality is a marked characteristic, considering that he is a Russian and Russians are not noted for that virtue. In the ten years during which I assisted him at the Military Medical Academy, he missed but one lecture, and then because of illness, and he has never been late to appointments. He has a gift for attention to detail. In his experimental work he plans the minutest details and, if possible, does the actual work himself at least until the procedure is standardized. This has made him especially good as a teacher.
>
> Pavlov does not like to write up the results of his own discoveries. He has published only about fifty articles, most of them very short, but his pupils have written, under his guidance, something like two hundred articles. However, probably not more than half the work on these publications was done by the pupils, Pavlov himself being responsible for a great part of it.
>
> Jealousy of the success of others was unknown to him. When there was too much talk of him as originator of the famous experiments on conditioned reflexes, he was the first to point out that Thorndike in America, independent of him, conducted similar experiments. When he lectured on digestion, he always pointed to Heidenham as the source of his inspiration.

Pavlov's first honorary title was given him by a Mexican scientific society in 1898. Previous to 1904, he had been elected an honorary member of many German and Russian medical societies. In 1904, he received the Nobel prize, and then followed many other honors: in 1907, Fellow of the London Royal Society and of the Petrograd Academy of Science; in 1912, the doctor's degree from Cambridge University; in 1915, the Copely Medal from the London Royal Society; in 1923, the doctor's degree from Edinburgh University. He was also a member of the Academies of Science of Paris, Rome, Bologne, and Denmark, and of the American, Irish, Belgian, and many other medical academies.

In 1935 he welcomed the 1200 delegates to the 15th International Physiological Congress in Leningrad. He was still vigorous, alert, and genial at eighty-seven, as shown in the front-page picture of him published in the Moscow *Daily News* (this paper was published in both Russian and English). The Congress was a testimonial to him and his school. He was held in great reverence—literally a little god—and physiology was almost a religion in the U.S.S.R. in 1935.

One of the field trips planned during the Congress was a visit to Koltushy, an estate dedicated to Pavlov and his associates, a new seat of physiology supported by the Soviet government. I remember the long bus ride over bumpy roads from Leningrad.

This was a new type of scientific institution, including an attractive home for scientific workers combined with modern and well equipped laboratories, and all attractively landscaped. A special village was built for laboratory animals, mainly dogs, of which there were several hundred. There was a separate kennel for each animal and well equipped kitchen, hospital, exercise hall, and yard, and even a maternity center for the bitches. The anthropoid apes had a house of their own, and Pavlov delighted in telling visitors in detail about his experiments on Rafael and Rose. He was comparing the achievements of the apes with certain stages in the development of human behavior, es-

pecially that quality introduced by language in the cerebral activity of man.

As many procedures as possible were mechanized for the sake of accuracy. All data in relation to breeding, feeding, maintenance, and general regimens, of the animals were carefully recorded in order to have exact information necessary for studying the physiology of the brain and higher nervous activity. An inscription on the outside of the laboratory building "Observation and Again Observation" was Pavlov's motto for his workers (5). Animals were devoted to their attendants, obviously a necessary relationship for the type of work in progress.

Pavlov usually spent one day a week at Koltushy and welcomed scientific visitors frequently. Through them he kept in touch with many contemporaries in related fields. He enjoyed showing the garden and surroundings as well as the laboratories.

Quoting from A. V. Hill's tribute to Pavlov (4) at the time of his death in 1936 shortly after the International Congress:

> It was Pavlov's immense prestige and the deep affection which physiologists the world over had for him which made the acceptance of an invitation to the Soviet Union possible. It was Pavlov's prestige and that affection, together with the mixture of playfulness, sternness, impatience, devotion, and simplicity which formed his character, that made the Congress so successful, and opened up what one hopes is an ear of friendly relations between physiologists in Russia and in the rest of the world.
>
> Wherever Pavlov appeared in public—whether in Leningrad, London, Boston, or elsewhere—his romantic and almost legendary figure, and the engaging simplicity and boyish humor of his bearing were apt to evoke prolonged and enthusiastic applause. He was sometimes rather impatient of his popularity.
>
> Pavlov was an old man in years, but he did not seem old in mind or in strength, and one of the memorable pictures of the Congress was of Pavlov giving his arm to a colleague ten years older than himself who came on the platform to address us. Partly by his age, partly by his repute, partly by his character, he was without peer among the scientists of his country, and he could be as tyrannical at one moment as he could be simple and boyish at another; but he was loved far more than he was feared. His single-hearted devotion to science and the cause of science was that of a religious man—as he was. I had remarked to him that many great Englishmen were the sons of country parsons. He proudly replied that he was the son and the grandson of a priest, and his wife was the daughter of a priest. My obvious comment that he himself was a high priest drew chuckles of boyish pleasure.
>
> One of the charming things about Pavlov was his family relationships. In his later years, whenever he went abroad, he was always accompanied by one of his sons. A lawyer son had in recent years devoted himself, I believe exclusively, to acting as his father's secretary and agent. Pavlov himself did not easily speak any language but his own, though he was able to converse, not very readily, in German. This son, however, was an extremely accomplished linguist and accompanied his father to such meetings as that of the Permanent International Committee of the Physiological Congresses, where conversation might be carried on in at least three languages and translated for him. I have the most vivid and charming memories of the old man and his son at these meetings, the latter taking part in the conversation in any language and rapidly giving his father in Russian the gist of all that was going on, the old man nodding and smiling and expressing his opinion with his hands and with smiles and nods all the while.

Pavlov was active almost up to the time of his death at eighty-seven. Just before his death he wrote (6):

> What can I wish to the youth of my country who devote themselves to science?
>
> Firstly, gradualness, About this most important condition of fruitful scientific work I never can speak without emotion.
>
> Learn the ABC of science before you try to ascend to its summit. Never begin the subsequent without mastering the preceding. Never attempt to screen an insuffiency of knowledge even by the most audacious surmise and hypothesis. Howsoever this soapbubble will rejoice your eyes by its play, it inevitably will burst and you will have nothing except shame.
>
> School yourselves to demureness and patience. Learn to insure yourselves to drudgery in science. Learn, compare, collect the facts!
>
> Perfect as is the wing of a bird, it never could raise the bird up without resting on air. Facts are the air of a scientist. Without them, you never can fly. Without them, your "theories" are vain efforts.
>
> Secondly, modesty. Never think that you already know all. However highly you are appraised, always have the courage to say of yourself—I am ignorant.
>
> Thirdly, passion. Remember that science demands from a man all his life. If you had two lives that would not be enough. Be passionate in your work and your searchings.

May I conclude with an excerpt from a Leningrad newspaper of August 8, 1935:

> A monument to the Unknown Dog was unveiled today at the Institute of Experimental Medicine here. The inscription on the monument, bearing the stone image of a dog, reads: "In memory of all dogs which have given their lives for physiological experiment for the purpose of prolonging life and improving human health."
>
> Someone called Pavlov a modern saint. The main characteristics of a saint are: sincerity, simplicity, and a limitless devotion to high ideals. In Pavlov's person we have this combination and more. He was not only a saint, but a prophet.
>
> Born in an obscure place that can hardly be found on the map, he grew in spite of the obstacles into a giant, whose greatness was too big for any national borders and reached every part of the civilized world.

REFERENCES

(1) KARPOVICH, P. V.: Pavlov as Scientist and Man. Springfield, (Mass.) Sunday Union and Republican, Mar. 8, 1936.

(2) GARRISON, F. H.: History of Medicine. 2nd ed. Philadelphia: W. B. Saunders, 1917.

(3) BOLDYREFF, W. N.: Biography of Prof. I. P. Pavlov, M.D. Bull. Battle Creek Sanitarium and Hospital, Clinic 19: 1, 1923.

(4) HILL, A. V.: A tribute to Pavlov. Science 83: 351, 1936.

(5) FROLOV, Y. P.: Pavlov and His School. New York: Oxford University Press, 1937.

(6) KUPALOV, P.: Bequest of Pavlov to the academic youth of his country. Science 83: 369, 1936.

Effect on Eating Habits of Nutrition Education in the Fifth Grade

Determination by Photography[1]

FAYE WOODARD GRANT[2]

Department of Home Economics, The University of Chicago

METHODS of determining the food choice of a group have been limited usually to inspection or to a questionnaire. The limitations of these methods are recognized. Inspection of trays may be time-consuming and subject to error, especially if there is a large number in the group under study; in the questionnaire method the investigator must depend upon the accuracy of the subject's memory and also upon how much they are influenced by their desire to win approval.

The purpose of the present study made it desirable that a reasonably accurate method of determining food choice be applied. Moreover, the method used required that it interfere as little as possible with the service of those eating in the cafeteria who were not a part of the study. For these reasons a photographic technique for recording food choice was developed[3].

PURPOSE OF THE STUDY

Judging from the amount of literature appearing during the last few years, considerable attention has been given to the dietary of the public school child. Emphasis has been placed upon the importance of nutrition in the curriculum and upon the nutritional value of his school lunch. There is little in either of these areas pertaining to the private school child.

The most recent study conducted with a group which seemed comparable to the group studied here was done by Neel at a private laboratory school in suburban Philadelphia (1). In that study it was shown that there was an increased consumption of "protective" foods during the period of a unit in nutrition, also that children of ten to eleven years have a definite interest in scientific experiences as well as in facts.

The purpose, then, of the present study was (a) to determine further what the private school child eats for his noon meal and (b) to determine his response to a unit in nutrition.

GENERAL PLAN

Subjects

The subjects were from a fortunate socio-economic group. Most of them were children of the faculty or of other professional people. The children were in the fifth grade. This particular grade was chosen because preliminary observation showed that many of the lunches did not include fruits and vegetables. Data were obtained for fifty children. At the beginning of the study the children ranged in age from ten years and two months to eleven years and four months. Using the Baldwin-Wood "Weight-Height Tables for Children," many were found to be overweight. The weight of sixteen of the group was above the average by 20 per cent or more; that of eight of the group was above the average from 10 to 19 per cent. It was evident that the diet of the greater number had not been deficient in total calories.

Procedure

General Science had been a part of the curriculum of the fifth grade, but until the time of the present study, nutrition had not been included until the sixth grade. However, the science teachers believed that nutrition would be a valuable subject to include earlier. This study was carried out with the cooperation of these teachers[4].

The unit in nutrition lasted for nine weeks. This was preceded by a period of five weeks during which photographic records were obtained of the lunches the group ate in the school cafeteria. Photographic records were obtained through the nine weeks cover-

[1] A report of a portion of the work done in fulfillment of the requirements for the degree of Master of Science, Division of Biological Sciences, Department of Home Economics, University of Chicago.

[2] Present address Department of Home Economics, Northwestern University, Evanston, Illinois.

[3] The photographic technique was proposed and developed by Herbert Thelan, Associate Professor of Educational Psychology, University of Chicago.

[4] Bertha Parker and Ida Podendorf of the Laboratory School of the University of Chicago.

ing the period of the unit and additional records were obtained five weeks after its completion. This procedure served three purposes. It provided information as to the quality of the lunches before the study of nutrition and of the immediate response; then, too, it provided a means of determining the carry-over from the unit.

Topics and Activities of the Course

The activities and subject-matter of the unit were planned to provide the opportunity for learning the essentials of nutrition as thought to be attainable by children of this age. The following topics and activities were among those included:

(1) Food habits and customs.
(2) Learning to take care of hamsters.
(3) Finding out why hamsters need food.
(4) The purpose of each food included in the hamster's diet.
(5) Food needs of the mother hamster.
(6) Something about each of the main food groups.
(7) Tests for different nutrients.
(8) Eating may be a part of a special training[5].
(9) Fancies concerning food.
(10) A "good" lunch.
(11) Planning and preparing for an open house with nutrition exhibits.

Attitude of Those in Charge of the Study

The motive for the photographing of the meals was discussed as little as possible. The procedure was never related directly to the unit in nutrition. There was evidence that many children in this group would not respond if the approach were made personal. Moreover, since several of the children were markedly overweight and a few underweight, it was felt that a personal approach might develop self-consciousness or anxiety. Then, there was the possibility that if the photography were related to the unit, the desire for approval might influence the choices made and mask the real results. The photographic technique was new to those taking part in the study and the arrangement was changed and modified during the period. The children, then, came to feel that the technique was an end in itself and that once the method was perfected, it would be an excellent tool for studying the amount of food consumed by individuals and groups. The honesty of this may be questioned, but balancing the success of one of the main outcomes sought—namely, the ability to choose a suitable lunch—against the failure that might result if the full purpose were known, the secretiveness seemed to be justified. It was expected that some of the children might ask questions that could be answered only by a full explanation. However, this did not happen. Evidently the children had learned to accept observation from previous experiences at the laboratory school.

The impersonal attitude of the lunch room was maintained in the class room. The children became interested in nutrition from the standpoint of their pets, the hamsters. Thus, any results obtained were the results of transference of the principles as applied in part to another species.

Photographic Technique

The meals photographed in the cafeteria were identified by number. A card bearing a number and the date was prepared for each child. These cards were distributed daily.

The photographic equipment consisted of a table, photographic lamps, a small motor, and a used Sept movie camera. The top of the table was approximately 3 by 5 ft.; its height was 2 ft. 7 in. A framework was constructed which extended $3\frac{1}{2}$ ft. above the top of the table, and the camera was mounted permanently in the framework to point downward toward the table top. Two photographic flood lamps equipped with 400-watt bulbs were placed at the sides of the table.

A switch which controlled the electrical connection with the motor was placed on one side of the table. The motor rested on a shelf under the top of the table.

The camera held 17 ft. of 35 mm. super-sensitive panchromatic film, with sixteen single frames provided per foot of film. Thus 272 trays could be photographed with each loading of film. The exposure was approximately 1/30 second.

The film was developed to produce positive transparencies which were studied by means of projection on a screen. Prints were also made in order to have a record for study when the projector and screen were not available.

During periods of study, the child selected his meal, passed to the cashier, and then brought the tray to the camera table where it was photographed. The procedure of placing the tray and taking the picture seldom took more than 1 min.

The meals of each child were recorded separately and the nutritive value calculated (2). In order to have a basis for calculation, the usual servings of foods in the cafeteria were weighed weekly. The average value was assigned to the food before the nutritive value was calculated. Recipes for the mixed dishes were obtained, and it was assumed that the contents did not vary from day to day.

RESULTS

Vegetables and Fruits

Usually there was a reasonably large selection of vegetables and fruits from which the children could choose. Yet, before the period of instruction only 15 per cent of the meals contained vegetables other than

[5] This lesson followed a showing of the film, "The Training Table."

TABLE 1

Intake of nutrients in school lunch by fifth-grade private school children

PERIOD	CALORIES	PROTEIN	CALCIUM	VITAMIN A	THIAMINE	RIBOFLAVIN	ASCORBIC ACID
		gm.	*mg.*	*I.U.*	*mcg.*	*mcg.*	*mg.*
5-week period preceding nutrition unit	619	26	306	1379	404	669	6
9-week period of nutrition unit	603	26	329	1563	380	678	10
Percentage change	−3	0	8	14	−6	1	66

potatoes, while 30 per cent of all meals contained fruit.

During the unit 39 per cent of all the meals contained vegetables and 35 per cent contained fruit, an increase of 24 and 5 per cent respectively. Many meals contained more than one vegetable or both vegetables and fruits. This occurred often while other means contained neither. Apparently some of the group responded to a greater degree. This finding resulted in a greater average increase of specific nutrients than would have occurred otherwise.

Essential Dietary Constituents

As mentioned, the dietary constituents were calculated. The results of these calculations of the two main periods appear in Table 1.

It may be seen that the increased amounts of vegetables and fruits were reflected in an increased amount of vitamin A and ascorbic acid. The average intake of vitamin A increased from 1379 to 1563 I.U.; that of ascorbic acid increased from 6 to 10 mg. Thus, vitamin A was increased by 14 per cent and ascorbic acid by 66 per cent. The decrease in thiamine during the period of instruction seemed to be due to the fact that pork was served much less frequently during the period in which the nutrition unit was given than in the period preceding it.

The decrease in the average caloric content of the meals seems of particular interest since this decrease may have been the result of an attempt made by the overweight-children to choose more suitable meals. In Table 2 are presented data supporting this interpretation.

Findings Five Weeks After the Instruction

Records were obtained for two days during this period. At this time the group was occupied with some other phase of science and on the first of these days nutrition was not mentioned. However, on the second day of the photographic recording, the menu was taken to the classroom. The children were asked to study the menu and to plan their lunches before

TABLE 2

Average caloric intake of overweight children during period of study

CHILD	OVERWEIGHT	CALORIC INTAKE		CHANGE	
		Period preceding nutrition unit	Period of nutrition unit	Calories	Percentage
	%				
1	50	647	578	−69	−10.7
2	42	780	686	−94	−12.0
3	36	560	522	−38	−6.8
4	32	639	716	77	12.0
5	31	587	525	−62	−10.6
6	30	575	543	−32	−5.6
7	28	731	724	−7	−1.0
8	20	679	505	−174	−27.2
9	19	762	688	−74	−9.8
10	11	745	644	−101	−13.6
11	10	762	688	−74	−9.8
12	10	740	589	−151	−20.4

TABLE 3

Number of meals containing vegetables and fruit on two days following the nutrition unit

DAY	NUMBER OF CHILDREN	MEALS WITH VEGETABLES		MEALS WITH FRUIT	
		Number	Per cent	Number	Per cent
Regular routine day	39	19	49	13	39
Day on which children studied menu before lunch	45	39	87	23	51

going to the cafeteria. The number of meals containing vegetables and fruit is given in Table 3.

It may be seen that 49 per cent of the meals on a day five weeks after the unit contained a vegetable; 39 per cent contained a fruit. Before the unit only 15 per cent of the meals had contained a vegetable and 30 per cent a fruit. Thus, it seems reasonable to conclude that the unit had resulted in permanent learning.

Effect of Specific Lessons on the Intake of One Nutrient

An attempt was made to evaluate specific lessons in terms of the food choices of the children on the day of the activity. It was found that a greater number of the meals contained cooked carrots, peas, and carrot sticks when vitamin A had been discussed during the morning. There was a similar increase in vegetables and fruits on the trays when the group had been occupied before lunch with the arrangement of meals from food models.

EVALUATION OF PHOTOGRAPHIC TECHNIQUE

The photographic method of determining food choices is semi-quantitative since it is necessary to make some judgment as to the amount of food ap-

pearing upon a ray. However, when the usual servings of different foods are weighed frequently and the average weights assigned to the foods as they appear, a degree of accuracy is obtained. It would be better still to determine the essential nutrients by means of suitable analysis of aliquot portions of the various foods from which the subjects choose. The method seems to have a decided advantage in terms of time needed to obtain the record. Moreover, there is less chance of error on the part of the investigator since the records are permanent and need not be evaluated until the necessary time is available.

SUMMARY AND CONCLUSIONS

The effects of a unit in nutrition were determined with fifty children of the fifth grade in a private school. The children were from a fortunate socioenonomic group. Before the period of instruction many of the lunches were considered inadequate, because only 15 per cent contained a vegetable other than potatoes and 30 per cent a fruit. During the period of instruction 39 per cent of the meals contained vegetables and 35 per cent fruit. Five weeks after the completion of the study 49 per cent of the meals contained vegetables and 39 per cent fruit. Though in general the unit was less effective, in terms of changes in food choice than had been hoped, it seems evident that learning had taken place. All of the children responded favorably to the activities and topics which were a part of the unit.

REFERENCES

(1) NEEL, R. S.: Nutrition education for the very young. J. Home Econ. 38:265, 1946.

(2) BUREAU OF HUMAN NUTRITION AND HOME ECONOMICS in cooperation with NATIONAL RESEARCH COUNCIL: Tables of food composition in terms of eleven nutrients. U.S.D.A. Misc. Pub. No. 572, 1945.

Potential Foods of Central America

Vast untapped food reserves in Central America provided by common weeds and a variety of other edible plants have been uncovered in a three-year survey conducted by the Nutritional Biochemistry Laboratories of the Massachusetts Institute of Technology. Samples representing more than two hundred kinds of food from plants were collected in Honduras, Guatemala, El Salvador, Costa Rica, Nicaragua, and Panama and analyzed at M.I.T.

Several foods of high nutritive value were found, particularly in the group classified as herbage vegetables. Three weeds were proved to be important potential food sources: *bledo extranjero*, or lambsquarters; *chipilin;* and *macuy* or *mora*. All three were high in calcium, iron, riboflavin, thiamine, and ascorbic acid, and the first two also had good quantities of carotene and niacin.

Chaya, the leaf from an ornamental tree found in Honduras which is not known to be used for food, was found to be edible and to have high values for calcium, iron, carotene, riboflavin, niacin, and ascorbic acid. *Tampala*, one of the pigweeds, is used as a cooked vegetable, and the sample analyzed showed high values of calcium, iron, carotene, riboflavin, niacin, and ascorbic acid.

The aquatic herb, *Jussiaea repens*, taken from the Rio Yeguare in Honduras, was another plant which would be suitable for food purposes, although it is not used in that way now.

The growing points and tender leaves of squash and pumpkin vines which are commonly eaten in Central America, were found by analysis to contain good quantities of calcium, iron, carotene, thiamine, riboflavin, niacin, and ascorbic acid. Also highly prized as food are the flowers of the yucca plant which analysis showed to be rich in thiamine, riboflavin, niacin, calcium, and particularly ascorbic acid. Yucca hearts which are also eaten are valuable sources of calcium.

Motate, the tender edible leaf base of a shrub used for hedges, was relatively high in calcium. Although this shrub grows abundantly in Central America, it is commonly used as food only in El Salvador. Likewise rich in calcium are the flowers of palms, or *pacaya*, which are eaten in Guatemala.

Another weed, sometimes eaten in Guatemala is the *Marva pariviflora*, which proved to be high in calcium, iron, carotene, thiamine, riboflavin, niacin, and ascorbic acid. This plant is a native of Europe and is sometimes troublesome as a weed in cultivated areas. However, it is suggested that it might be profitable to use it more extensively as food in Latin America.

Puntas de chayote, or growing ends of *chayote*—an abundant Costa Rican plant—are rich in iron, carotene, thiamine, riboflavin, and niacin.

Analyses were made with nineteen samples of beans, varying in size from the very tiny rice bean (*frijol de arroz*) to the large red bean (*frijol guaria*). The outstanding feature, with one or two exceptions, was their remarkable similarity in composition. The rice bean showed the greatest difference in its very high calcium content.—*Abstract from a paper by Hazel E. Munsell, Louis O. Williams, Louise P. Guild, Lucile T. Kelley, Ann M. McNally, and Robert S. Harris delivered at the Division of Agricultural and Food Chemistry session of the American Chemical Society meeting in Philadelphia, April 10, 1950.*

Nutrition in Relation to Disease of the Heart and Blood Vessels[1]

G. E. WAKERLIN, Ph.D., M.D.

Department of Physiology, University of Illinois College of Medicine, Chicago

THE first medical problem of the United States today is disease of the blood vessels or arteries, since most heart disease is due to disease of the arteries of the heart. The two most common diseases of the arteries are hypertension (high blood pressure) and arteriosclerosis (hardening of the arteries). Inadequate heart action or cardiac insufficiency is most commonly due to hypertension or arteriosclerosis (or both) in the older adult; in childhood and youth, cardiac insufficiency is most commonly due to rheumatic fever. Other infections and conditions, including congenital malformations, are responsible for a minor proportion of diseases of the heart and blood vessels.

The seriousness of this medical problem is evidenced by the fact that it is responsible for 600,000 deaths per year in the United States, or three times as many as cancer, the second killer of Americans. Diseases of the heart and arteries often strike in middle age when the individual may be at the peak of usefulness to society and when he has important family responsibilities. Moreover, the proportion of our population over forty years of age is steadily increasing. Unless we deal more effectively with cardiovascular disease (disease of the heart and blood vessels), one in three Americans now living, or 45,000,000, will ultimately die from this cause. Some public relations experts and some psychiatrists have objected to this type of presentation, and one of the former has pointed out that one out of one will die, period. Nevertheless, our ideal should be economic stability, emotional security, and good health for all age groups.

Biologic and medical research has made notable advances in the field of cardiovascular disease in recent years. Thus certain forms of hypertension can now be effectively treated by surgery; a formerly fatal infection of the heart valves (subacute bacterial endocarditis) is now cured with penicillin and the sulfonamides; and certain forms of congenital cardiovascular malformations are now effectively treated by surgery (the so-called "blue baby operation"). Nevertheless, our treatment of hypertension, arteriosclerosis, rheumatic fever, and the heart disease which they produce is only partially effective because of our lack of knowledge of the fundamental mechanisms involved. The bottleneck of progress in this field is not ideas but money. In my judgment, phenomenal advances will be made in cardiovascular research when adequate funds are provided. Fortunately, the American Heart Association and its local affiliates are now supporting research, education, and service in the field of cardiovascular disease. The recently established National Heart Institute of the U. S. Public Health Service not only conducts research in cardiovascular physiology and disease but supervises the distribution of government research and teaching grants to other biologic and medical research institutions.

In discussing nutrition in cardiovascular disease, I shall limit consideration to hypertension, arteriosclerosis, and cardiac insufficiency, which together account for most disease of the heart and blood vessels.

HYPERTENSION

Ninety per cent of all patients with hypertension belong to the group known medically as essential hypertension. This means simply, chronic hypertension of unknown cause or causes. The remaining hypertensive patients have high blood pressure because of nephritis (kidney inflammation), kidney anomalies or malformations, renal tumors, tumors of the adrenal gland, and other causes. Differentiation of these latter hypertensions from essential hypertension is important, because some of the hypertensions of known cause can definitely be cured.

Although the ultimate cause or causes of essential hypertension are unknown, the following factors are considered contributory: (a) Heredity. Hypertension is more likely to appear in some families than others. (b) Aging. Hypertension is found principally in the forty to sixty-nine age group, although even

[1] Presented at the annual meeting of the Illinois Nutrition Association in Springfield, Illinois, in November, 1948.

babies have been known to have hypertension. (c) Body habitus. Hypertension is more frequent in the short, stocky, sthenic type than in the tall, lean, asthenic type. (d) Mode of living. "High tension" living has been considered to predispose to hypertension. (e) Diet. High-protein and high-fat diets have been considered to predispose to hypertension, but there is no good evidence for this view.

While the ultimate cause or causes of essential hypertension are unknown, we do know that the pressure of the blood in the arteries is increased because the smallest arteries (the so-called arterioles) supplying the various organs and tissues of the body are somewhat more constricted or contracted than normally; i.e., reduced in diameter. As a result, the heart must pump more forcibly to move the blood through the narrowed arterioles into the capillaries where the blood supplies the tissues with foodstuffs and oxygen and takes up waste products, including carbon dioxide. The relationship between these microscopic arteries and the blood pressure is such that when they decrease in diameter by one-fifth, the blood pressure is doubled.

Complications of Hypertension

Obviously the work of the heart is increased in hypertension; the heart increases in size (hypertrophies) and has a reduced reserve. There is good evidence that hypertension accelerates arteriosclerosis, including sclerosis and narrowing of the coronary or heart arteries. As a consequence of these various factors, hypertensive patients may develop various forms of heart inadequacy or insufficiency. The cerebral or brain arteries are thin-walled and are more subject to arteriosclerosis in hypertension. Hence brain hemorrhage or stroke is also a frequent complication of hypertension. A minority of patients with hypertension develop renal or kidney failure and succumb to this complication. As the hypertension continues, some of the narrowing of the arterioles or microscopic arteries is no longer due to contraction of the smooth muscle coat of the arterioles but to gradually developing sclerosis in these vessels.

While the basic mechanism of essential hypertension remains unsolved, we have increasing evidence that nervous, endocrine, and renal factors play roles, perhaps of varying importance, in different patients.

Experimental hypertension in many respects resembling essential hypertension has been produced in the dog and other animals by partial constriction of the renal arteries. Recent studies on hypertensive dogs have given much information of value for our better understanding of essential hypertension, and work in various laboratories and clinics may eventually lead to the prevention and cure of the condition. Hypertension has also been produced by severing certain nerves in the neck region of the dog, and study of this type of experimental hypertension has also yielded important data.

Treatment of Hypertension

There is presently no magic bullet for the treatment of essential hypertension. Psychotherapy is of value. The fact that essential hypertension is not infrequently a benign disease with the patient living into old age is too often forgotten. The mode of living of the patient should be altered in keeping with common sense and his individuality, employing moderation rather than interdiction as the keynote. If the patient shows undue nervous tension, intermittent courses of one of the sedative drugs may be used. New drugs are being studied in the treatment of essential hypertension, and a few drugs are known to be of value. Operative removal of a part of the sympathetic nervous system appears to be curative in 10 to 20 per cent of patients with essential hypertension and helpful in others.

Years ago radical restriction of protein and salt was recommended in the management of essential hypertension. Recently a low-protein, low-salt diet consisting principally of rice and fruit has been recommended on the thesis that the kidney is involved causally in essential hypertension and that the work of this organ is reduced by such a diet. The fundamental basis of this therapy is definitely still hypothetical. Nevertheless, significant reductions in blood pressure have occurred in some patients on the so-called rice diet. In keeping with the dictum that moderation in all things is the keynote for living with essential hypertension, excessive ingestion of food should be avoided, and if the patient is overweight, a moderate reducing diet should be prescribed. For the essential hypertensive patient of normal weight, however, a protracted adherence to the low-calorie, low-vegetable-protein content of the rice diet must inevitably lead to undernutrition and malnutrition.

Recently there has been a revival of radical restriction of sodium chloride in the dietary to 200 to 700 mg. per day. About 10 per cent of patients placed on low-salt diets show significant reductions in blood pressure. Possibly these patients constitute a species of hypertension within the broader genus of essential hypertension.

The low-salt diet and the rice diet must be studied further in research hospitals and clinics before their use by physicians generally is recommended, since these therapies are not without certain dangers. The rice diet may act mainly through salt restriction. For the average patient with essential hypertension, an ordinary well-balanced diet of varied composition adequate to maintain normal or near normal weight is recommended. Excessive protein and salt should be avoided.

ARTERIOSCLEROSIS

Arteriosclerosis, or hardening of the arteries, is a condition involving non-inflammatory thickening of

the arterial wall, accumulation of lipoid or fat-like substances, and degenerative changes, often with calcification, distortion, and loss of elasticity of the artery. Arteriosclerosis differs somewhat in type depending on the size and location of the artery, but the process is fundamentally the same.

Causes of Arteriosclerosis

The ultimate cause or causes of arteriosclerosis are presently unknown, although the following are contributory factors: (a) Heredity. Arteriosclerosis is more likely to appear in some families than in others; in other words, the "vital rubber" of the arteries of some families is better than others. (b) Aging. Arteriosclerosis is predominantly a disease of middle or old age, although it has been described in children. Some have considered arteriosclerosis as part of the normal aging process which is accelerated in some and retarded in others. The elasticity of the arteries, for example, progressively decreases from birth to death and the fat content increases. (c) Mode of living. Undue mental and physical strains have been considered to predispose to arteriosclerosis. There is presently no proof for this. (d) The constant and variable pressure of the blood against the arterial wall is considered to be a factor, and hypertension appears to accelerate the arteriosclerotic process. Nevertheless, hypertension may exist with little arteriosclerosis, and advanced arteriosclerosis may be present without hypertension. (e) Diet. High-protein and high-fat diets have been considered to predispose to arteriosclerosis. There is no adequate proof for this concept, and indeed very recently, a study of the inhabitants of the Aleutian Islands who have lived for generations on a high-protein, high-fat diet shows no arteriosclerosis.

The thoracic aorta (the chest portion of the great artery leading from the heart) is most frequently and extensively involved in arteriosclerosis. Frequently involved and very important from the medical standpoint are the cerebral or brain arteries and the coronary arteries supplying the heart muscle. Obviously the narrowing of the lumen of an artery by arteriosclerosis will produce a decrease in the blood-flow to the organ or tissue supplied by that artery. Accordingly, the complaints of the patient will vary depending upon the severity and location of the arteriosclerosis. There may be leg pains and difficulty in walking when the arteries of the lower extremities are involved. Heart pain and cardiac insufficiency will be present if the coronary arteries are severely enough involved. If the cerebral arteries are sufficiently arteriosclerotic, mental and other nervous disturbances will result.

Experimental arteriosclerosis has been produced in various laboratory animals by high-cholesterol feeding, by the injection of certain toxic agents, and by the injection of certain drugs capable of producing an increase in blood pressure. Experimental cholesterol arteriosclerosis resembles human arteriosclerosis in many ways, and presently intensified research in this field may well yield important information relative to the fundamental causes, prevention, and effective treatment of arteriosclerosis.

Treatment of Arteriosclerosis

The treatment of arteriosclerosis obviously is only partially effective since fundamental causes and mechanisms are poorly understood. Psychotherapy is of value. Moderation of the physical and mental activities of the patient, individualized to fit his needs, is desirable. Infrequently sedatives may be indicated.

The patient with arteriosclerosis should have a well-balanced, varied, and adequate diet sufficient to maintain normal or near normal weight. If he is overweight, a moderate reducing diet should be employed, not only because excessive body weight is a strain on the cardiovascular system, but it also appears to accentuate the arteriosclerotic process.

At present there is no conclusive evidence that the ingestion of moderate amounts of foods containing fat and cholesterol is significant in relation to the genesis or progress of arteriosclerosis, even though the feeding of large amounts of cholesterol to experimental animals produces arteriosclerosis. Nevertheless, some physicians recommend a low-fat, low-cholesterol diet for patients with arteriosclerosis. In regard to cholesterol, this need not go beyond eliminating or moderating the consumption of egg yolk, brain, kidney, liver, pancreas, thymus, and salmon roe, all of which are rich in cholesterol. It should be remembered that the liver is capable of synthesizing cholesterol from simple organic compounds, such as acetate, and that the cholesterol or steroid nucleus is all-important to a number of vital body functions.

CARDIAC INSUFFICIENCY

Cardiac insufficiency, as previously stated, may result from a number of different causes, particularly from hypertension, arteriosclerosis, and rheumatic fever. Inadequacy of heart action may be of varying degree from undue shortness of breath on exertion to such severe impairment of the heart's ability to pump the blood as to produce congestion and edema of the various tissues and organs of the body, difficult breathing even at rest, and other signs. One severe form of cardiac insufficiency may result from coronary thrombosis.

Treatment

Treatment of cardiac insufficiency will obviously vary with the cause but usually includes rest, certain drugs such as digitalis, and dietary control.

In the acute stage of cardiac insufficiency or failure, the patient is usually not much interested in food, and the caloric problem need not be of concern for a few days. Edema and congestion of the stomach and intestines handicap their function in the diges-

tion and absorption of food. A limited liquid diet may be used for one or two days, and as soon as the patient has better appetite, a light diet should be given and increased until the amounts are adequate to maintain normal weight. To a considerable extent the selection of foods may be left to the patient, and interestingly enough he will often select the foods which are considered best for him. The average hospital "soft, low-salt diet" or "cardiac diet" will serve the purpose in most patients. Foods which produce flatulence (gas) should be avoided. Small meals with intermediate feedings are better tolerated, since large meals considerably increase the work of the heart.

Malnutrition and undernutrition are not uncommon in patients with chronic heart disease because of their continued poor appetite. For this reason and because proteins as well as adenosine phosphate, creatine phosphate, and glycogen are highly important for cardiac muscle contraction, the caloric and protein intakes should be increased above normal (by protein concentrates and digests if necessary) when indicated. Thiamine may be given in a 10-mg.-per-day dose, since this vitamin is important to good cardiac function. Once the cardiac patient is up and about, the diet may be further liberalized, but the patient should refrain from overeating and from eating too much at any one time. Weight is best maintained at 5 to 10 lb. below the average for the sex, height, and age.

Regulation of the sodium chloride and water in the diet is of definite importance in the treatment of cardiac insufficiency. The average American diet contains 10 to 15 gm. salt per day. By eliminating cooking and table salt, the salt in the diet can be reduced to 3 to 4 gm. per day. By also eliminating foods relatively high in salt, the sodium chloride can be reduced to 2 to 3 gm. per day which is usually sufficient for the cardiac patient. When necessary, special diets containing 0.5 to 1.0 gm. salt per day have been devised. By restricting salt in cardiac insufficiency, the water of the edema fluid which is held in the tissue spaces by its salt content is mobilized and eliminated through the kidney. The water intake, therefore, is less important than the salt intake. Generally the cardiac patient with salt restriction may drink as much water as he desires, inasmuch as his sense of thirst is a good index of the state of water balance, and water without sodium chloride will not increase the edema. If the urine output falls below 1000 cc. per day, the patient should be encouraged to drink more water in order to maintain adequate elimination of metabolites. Not infrequently salt restriction is supplemented by drugs which facilitate the removal of edema fluid.

In closing, obviously more biologic and medical research in the laboratory and in the clinic is necessary to achieve maximal effects from the application of nutrition knowledge to the treatment of diseases of the heart and blood vessels.

Appert's Method of Preserving Whole Milk (1809)

I took twelve *liters* of milk fresh from the cow. I condensed it in the water-bath and reduced it to two-thirds of its quantity, frequently skimming it. Then I strained it through a boulting cloth. When cold, I took from it the skim which had risen while it was cooling, and bottled it, with the usual process, and afterwards put it in the water-bath, which I let boil for two hours; at the end of several months, I perceived that the cream had separated itself and was swimming in the bottle in the form of flakes. To obviate this inconvenience, I made a second experiment on a like quantity of milk which I condensed in the water-bath, reducing it to one-half, instead of one-third, as I had done the former. I then added to the milk, so reduced, the yolks of eight new laid eggs well beaten. Having left the whole thus well mingled half an hour on the fire, I completed the experiment as before. This expedient perfectly succeeded.

The yolk of egg had so completely combined all the particles, that at the end of a year, and even of eighteen months, the milk remained as fresh as when I put it in the bottles. The first also was preserved more than two years. The cream which was in flakes disappeared when put on the fire. Both sustained the boiling alike. From both, butter and whey were afterwards obtained. In the different experiments and chemical analyses to which they were exposed, it was found that the last, being much the better, was equal to the best cream sold at Paris to drink with coffee.

A committee examined a sample of milk nine months after it had thus been prepared and made the following comments: "The milk was found to be of a yellowish colour, resembling that of colostrum or beestings, more thick, as well as sweeter and more savoury than the ordinary milk: a superiority it derives from the concentration it has undergone. It may be affirmed that milk of this kind, though prepared nine months before, may supply the place of the greater part of the cream sold at Paris. . . ."

—*Excerpt from* THE ART OF PRESERVING ALL KINDS OF ANIMAL AND VEGETABLE SUBSTANCES FOR SEVERAL YEARS *by M. Appert, pp. 40, 41, and 95 (a work published by order of the French Minister of the Interior on the report of the Board of Arts and Manufactures). Translated from the French, second London edition, New York: D. Longworth, Shakespeare Gallery, 1812.*

Nutritional Status of Children

X. Feeding Practices in Child-Caring Agencies: Communal Feeding of Adolescent Boys[1]

MARCIA WARD and IRMA HAWLEY
Visiting Housekeeper Association of Detroit
and
RUTH UHLER THOMAS and HAZEL METZ
Research Laboratory, Children's Fund of Michigan, Detroit

In the preceding paper (1) were outlined the dietary problems of a child-caring agency operated on the "cottage plan," in which two meals a day were prepared in the kitchens of the cottages and the other meal was served in a communal dining room. Food inventory records obtained during a period of two months demonstrated the necessity of integration between the meal planning of the group and the communal meals to assure adequate distribution of nutrients, both among individuals and from one 24-hr. period to another. In this report is presented an evaluation of the adequacy of communal feeding for a group of adolescent boys in a corrective institution, obtained by careful calculation of the nutritive value of all foods eaten by representative individuals. The information acquired demonstrates the significance of data on the consumption of individual foods, or food groups, by single subjects, in estimating the distribution of nutrients among children and during 24-hr. intervals. The following paper will relate the boys' intakes of nutrients to records of their blood levels of nutrient essentials and of medical evaluations in a combined approach to the estimation of nutritional status.

The administrators of the Boys Republic had received the cooperation of the Visiting Housekeeper Association of Detroit, another Community Chest agency, in an effort to provide ample nourishment for the adolescent boys. Although the weekly menus were constructed on the basis of an adequate low-cost diet (2) and no limit was put on extra servings, the boys had expressed dissatisfaction with the quantity of food provided, especially milk. After a review of the food budget, the milk allowance was increased and a plan was made to evaluate the adequacy of the diet.

[1] Received for publication March 17, 1950.

Most of the boys at the Republic come from underprivileged homes, many from broken families. The Republic provides facilities for school attendance, part-time work, and recreational activities, and functions under a system of self-government in which the boys elect officers responsible for the formulation and enforcement of rules most beneficial to the community. Upon entering the institution a boy automatically becomes indebted for necessary items of food and clothing, is assigned a definite job, ranging from kitchen and farm tasks to night police duty, and earns an hourly wage paid in script. An ambitious newcomer who works steadily on assigned jobs without undue misconduct can become debt free in about nine months and is then known as a "luxury boy" because money earned thereafter may be used for extra food and clothing. With the cooperation of Clyde Reed, Superintendent at the Boys Republic, it was possible during the nutritional status survey (3) to evaluate the food intakes of boys by the weighed dietary method. This method provides information not only about the individual diet and nutritive needs of the individuals studied, but also indicates a general distribution of intake for the entire group.

EXPERIMENTAL PROCEDURE

From volunteers among sixty-one boys, twelve were selected for the special food study. Four were fourteen, four were fifteen, and four were sixteen years old. Two of the four boys in each age group had been living at the Republic for at least six months. Except for a Negro boy sixteen years old, all participants were Caucasian. One was on night duty, and two were "luxury boys."

In a trial period prior to the study each boy was taught to weigh individual foods, "weigh back" uneaten foods, and keep records. During the study the

boys passed through the cafeteria line, served themselves in paper food containers (3), and ate in a separate dining room under the supervision of a Visiting Housekeeper who checked all weighing of food and recording. To evaluate factors which might influence food choice and intake, the individual variations in activity and physical exertion were recorded, and the sociological histories were studied for possible emotional or environmental aspects. Since menus are recognized to vary characteristically during the week and other investigators have obtained useful information from data representing that interval (4–6), weighed food intakes of the twelve boys were obtained for seven consecutive days.

Boys at the Republic are not prohibited from eating between meals. In fact, evening "snacks" are available frequently, and a friend on kitchen duty, gifts from visitors, and farm produce are sources of extra food. By instruction and demonstration, the importance of weighing all foods and accurately recording the amounts was emphasized. The interest and cooperation of the boys were impressive; they were painstaking in adhering to the program, even bringing in potatoes and apples of the size eaten while harvesting these crops.

The records of the amounts of foods consumed by each boy were summarized for each day of study and from the totals were calculated intakes (7–9) of calories, animal protein, vegetable protein, fat, carbohydrate, vitamin A, thiamine, riboflavin, niacin, ascorbic acid, calcium, phosphorus, and iron. Values for mixed dishes were determined from the cook's recipes and labels on commercially-prepared foods. Values for cooked foods were used when available but for some food combinations corrections based on raw food values were necessary. Mean daily intakes for each nutrient were computed from the data for the seven days.

RESULTS AND DISCUSSION

The weights and heights of the twelve boys participating in the food study, the percentages of weight and height standards, and the means for each age group are compared in Table 1 to the mean weights and heights and percentage of standards for all boys of corresponding age in the population of the Republic. Since both weight and height, as well as age, are indices of food requirements, they should be considered together in determining that subjects of study are representative of a population group.

Table 1 shows that there were boys in the study group whose weights and heights were lower and others whose weights and heights were greater than mean values for all boys of the same age at Boys Republic. Weights for age were not consistent: one sixteen-year-old boy weighed 44.9 kg., less than any of the fourteen- or fifteen-year-old boys. This same boy was shorter than most of the other subjects, demonstrating that age is only one criterion for dietary requirements. In each age group some subjects were below and some above their respective standards for either weight or height. Weight percentages were almost equally divided above and below the standard, at all age levels. In height, percentages of standards for ages fifteen and sixteen were equally divided above and below the standard, but all fourteen-year boys were taller than the average.

The means for age groups were lower than aver-

TABLE 1

Weights and heights of twelve boys in study group compared with those of corresponding age in total population of Boys Republic

SUBJECT	WEIGHT		HEIGHT	
	Kilograms	Per cent of Meredith (10) monthly standards	Centimeters	Per cent of Meredith (10) monthly standards
Boys 14 Years Old				
R. D.	49.0	101	162.0	102
E. P.	51.9	100	169.0	104
J. B.*	53.5	98	166.5	101
H. M.*	64.4	118	172.5	105
Mean, study boys	54.7	104	167.5	103
Mean, 12 boys†	60.9	116	169.9	104
Boys 15 Years Old				
A. B.*	46.0	80	155.0	92
R. C.*	52.6	91	166.5	99
V. N.	59.2	102	170.0	101
J. F.	65.3	118	176.5	107
Mean, study boys	55.8	98	167.0	100
Mean, 27 boys†	60.4	107	170.2	102
Boys 16 Years Old				
H. C.	44.9	75	155.0	90
J. D.	53.5	90	164.0	96
R. S.*	77.1	125	174.0	101
C. L.*‡	84.8	136	179.0	103
Mean, study boys	65.1	107	168.0	98
Mean, 20 boys†	63.0	105	170.7	100
All Boys				
12 study boys				
Minimum	44.9		155.0	
Maximum	84.8		179.0	
59 boys†				
Minimum	44.4		155.0	
Maximum	84.8		183.5	

* Resident of Boys Republic longer than six months.

† All boys of that age in Boys Republic population, including those in this study.

‡ Negro.

ages for all boys of that age in the population except for the four sixteen-year-old boys, whose average weight was higher. All other mean weights and heights were lower than average values for boys of the same age in the group. Further evidence that the twelve boys studied not only represented all boys of their age groups but also, together, the total population of Boys Republic is shown by the close conformance of the ranges of weight and height for the twelve boys with the ranges for fifty-nine of the sixty-one residents in the agency.

Information concerning the food needs and eating habits of adolescents is extremely limited. Only a few studies since 1921[2] have indicated the food requirements of normal adolescent boys by determinations of the nutrients in the food eaten by healthy individuals (Table 2), but conclusive information regarding the specific nutritive requirements for a certain age are not available. Each of these studies portrays variations owing to differences in methods of calculation, environment, climate, economic level, customs, and feeding habits; and individual differences in age, sex, weight, race, and activity. Discrepancies occur even in comparison of the same foods, which may vary in composition as much as 200 per cent between geographic areas. The usual standards for planning meals may not provide for the demands of rapid growth and development, the dynamic physiological and chemical changes, and the emotional strains which are superimposed on the basal requirements of an active body.

In many cases, recommended dietary allowances such as those of the Food and Nutrition Board of the National Research Council (19) constitute the only means of assessing diets. Although these allowances have been established from the best available data, they are subject to change with continued research. Moreover, they are intended for group use and should be applied to the individual only if these limitations are kept in mind. Keys (20) and Wilder (20) have stressed that it is important not to confuse dietary requirements with recommendations.

The mean physiologic fuel values of the daily food intakes of each of the twelve boys are presented in Table 3. They also are expressed in relation to body weight, height, and surface area. In Table 3 is also shown the consumption of protein, fat, and carbohydrate, and the percentage contribution of each, on the average, to the total physiologic fuel value of the daily food intake.

Four boys—two fourteen, one fifteen, and one sixteen years old—had caloric intakes lower than the 3200 calories recommended by the Food and Nutrition Board for boys fourteen years old weighing 49 kg. The boys fourteen years old weighed 49 and 52 kg. and consumed food providing 3000 and 3100 calories, respectively; the boy fifteen years old weighed 59 kg. and ingested 3000 calories per day; and the boy sixteen years old weighed 45 kg. and ingested 2500 calories per day. All other boys were heavier than the 49 kg. upon which the recommended allowances for ages thirteen to fifteen are based, and the weights of three exceeded the 64 kg. upon which recommendation for ages sixteen to twenty are predicated. The food intakes of the other eight boys provided more calories than recommended for boys thirteen to fifteen and for two boys, more calories than are recommended for ages sixteen to twenty.

For all twelve boys fourteen to seventeen years old the mean weight of 58.5 kg. and mean daily intake of 3511 calories conformed closely with the pattern indicated for adolescence by the recommended allowances of the Food and Nutrition Board. However, from the data, it is apparent that factors in addition to age and weight played decisive roles in determining the food intakes of the individuals studied. The six boys who had lived at the Republic over six months consumed amounts of food which provided more calories, on the average, than the mean physiologic fuel value of the diets of the six boys who had been residents less than six months. This difference is explainable for the two groups by the mean weights of 63.1 and 54.0 kg., respectively, and the fact that three of the residents for over six months had food privileges. Within the groups, however, lack of conformance between values for individuals and the averages for groups indicated that emotional difficulties, activity, and perhaps other factors also may have influenced food intake.

The caloric intakes per kilogram of body weight exhibited a steady decline with age, with means of 64.6, 59.6, and 58.0 for boys fourteen, fifteen, and sixteen years old, respectively. These figures compare favorably with values found by Widdowson (18) for English boys of the same age groups, and and conform with the findings of Holt and Fales (12) that a gradual decrease in calorie-per-kilogram level is associated with a decline in growth needs, beginning in boys at about sixteen years of age. However, average daily values per kilogram of body weight did not show a direct relationship with age, nor did the values on the basis of body length and area.

The mean protein intakes of all boys were above the recommended levels considered in relation to the ages or weights of the individuals, and approximately 60 per cent of the total protein was from animal sources, which recent studies (22) have indicated as desirable. The mean protein intakes of 103, 107, and 119 gm. for ages fourteen, fifteen, and sixteen, respectively, were higher than those given by Widdowson (18) and Wardlaw and White (15) and lower than the ones reported by Holt and Fales (12) (Table 2). The percentages of calories supplied by protein

[2] A comprehensive review of food and metabolic studies prior to 1930 is presented in the report of the White House Conference on Child Health and Protection (11).

TABLE 2

Mean daily intakes of adolescent boys recorded in the literature and at Boys Republic

DATE	STUDY	LENGTH OF STUDY	CHILDREN		TYPE OF SUBJECT	ENERGY	PROTEIN	FAT	CARBOHYDRATE	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID	CALCIUM	PHOSPHORUS	IRON	REMARKS
			Number	Age														
		days		*years*		*calories*	*gm.*	*gm.*	*gm.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*	*gm.*	*gm.*	*mg.*	
1921–22	Holt and Fales (12)	4	2	14–15	Well-to-do American in own homes		162	152	571									Dietary records, nutrients calculated
			2	15–16			134	142	541									
			1	16–17			116	121	380									
1926	Currier (13)	7	35	13–18	American institutional farm	3600												Weighed diets, nitrogen analyses, calories determined
1929	Williamson (14)	7	34	13–18	American institutional school	3300												Weighed diets, nitrogen analyses, calories determined
1940	Wardlaw and White (15)	7	46	13	Australian school	2338	77.0	84.7	260.5									Weighed diets, analyzed for protein, fat, and carbohydrates; calories calculated by factors: 4.1, 9.3, 4.1, respectively
			103	14		2338	77.8	79.2	311.5									
			67	15		2697	85.0	84.3	333.0									
			131	16		2642	89.2	95.5	339.4									
1944	Wiehl and Berry (16, 17)	2	35	13	Private school, New York City	2860	117			9,700				125	1.29		19.4	Verbal dietary histories, nutrients calculated
			49	14–15		2949	114			11,900				137	1.45		19.7	
			43	16–18		3235	138			12,100				138	1.68		23.2	
			25	13	Public school, New York City		96			7,900				92	1.22		14.6	Verbal dietary histories, nutrients calculated
			135	14			101			5,900				91	1.19		15.0	
			253	15			100			5,500				88	1.17		15.2	
			320	16			103			5,900				91	1.18		15.6	
		3–4	301	13–15	Jewish	2614												
			438	16–19		2691												
			65	13–15	Italian	2757												
			136	16–19		2936												
			44	13–15	Other	2918												
			97	16–19		3087												
1947	Widdowson (18)	7	21	13–14	Middle-class English in own homes	2756	79	104	357	4,480	0.94			62	0.79	1.25	13.6	Weighed diets, nutrients calculated
			36	14–15		3065	89	116	396	6,150	1.01			46	0.76	1.41	17.5	
			22	15–16		3440	100	137	429	6,460	1.09			58	0.87	1.56	18.5	
			27	16–17		3105	94	123	384	5,880	1.13			54	0.79	1.48	18.0	
1949	This study	7	4	14–15	American institution	3536	103	122	503	5,865	1.8	3.5	17	92	2.0	2.3	16	Weighed diets, nutrients calculated
			4	15–16		3270	107	106	468	5,484	1.9	3.6	17	95	2.0	2.4	16	
			4	16–17		3726	119	120	538	6,660	2.0	3.9	19	132	2.2	2.6	18	

were remarkably constant among the subjects of all ages, ranging from 10 to 14 and averaging 12 per cent. Protein intakes per kilogram of body weight were not directly related to age, weight, or length of residence in Boys Republic. Values per kilogram of body weight reported in the literature for corresponding age groups indicate wider variability than do the values in Table 3: from 1.5 to 1.8 gm. (15), close to 2 gm. (18), and from 2.2 to 3.4 gm. (12).

Mean daily fat intakes of 122, 106, and 120 gm. for boys fourteen, fifteen, and sixteen years old, respectively, compare favorably with 116, 137, and 123 gm. for English boys of the same age. On the basis of body weight, 2.22, 1.94, and 1.86 gm. fat per kilogram for the age groups also agree with Widdowson's findings (18).

Average levels of carbohydrate intake, 503, 468, and 538 gm. for ages fourteen, fifteen, and sixteen, respectively, exceeded those of 396, 429, and 384 gm. for English boys (18) of the same ages. However, the high levels of carbohydrate consumed reflect the candy and other starchy foods received from visitors. The mean carbohydrate intakes of the age groups ranged from 7.06 to 10.54 gm. per kilogram of body weight, amounts higher than those found by Widdowson (18), but less than the 10 gm. per kilogram recommended by Holt and Fales (12).

The daily fat and carbohydrate intakes of individuals were more variable than the average amounts of protein ingested. Variability per kilogram of body weight was more pronounced for carbohydrate than for fat. Mean intakes of fat and carbohydrate, higher for the six boys who had been in the care of the agency over six months than the means for the six residents of less than six months, account, in part, for the higher caloric values of the

TABLE 3

Physiologic fuel values of average daily food intakes of twelve boys

SUBJECT	PHYSIOLOGIC FUEL VALUE OF DIET*				PROTEIN					FAT			CARBOHYDRATE		
	Total calories	Calories per kilogram	Calories per centimeter	Calories per square meter	Animal	Vegetable	Total	Per kilogram	Physiologic fuel value†	Total	Per kilogram	Physiologic fuel value†	Total	Per kilogram	Physiologic fuel value†
Boys 14 Years Old															
					gm.	*gm.*	*gm.*	*gm.*	*% of total*	*gm.*	*gm.*	*% of total*	*gm.*	*gm.*	*% of total*
R. D.	2957	60.3	18.2	1971	58	37	95	1.94	13	95	1.94	29	428	8.73	58
E. P.	3103	59.8	18.4	1964	56	42	98	1.89	13	104	2.00	30	439	8.46	57
J. B.‡	4052	75.7	24.3	2564	65	41	106	1.98	10	151	2.82	34	564	10.54	56
H. M.‡	4030	62.6	23.4	2290	68	46	114	1.77	11	138	2.14	31	581	9.02	58
Mean	3536	64.6	21.1	2197	62	41	103	1.90	12	122	2.22	31	503	9.19	57
Boys 15 Years Old															
A. B.‡	3280	71.3	21.2	2326	62	43	105	2.28	13	104	2.26	29	478	10.39	58
R. C.‡	3319	63.1	19.9	2114	63	43	106	2.02	13	105	2.00	28	484	9.20	59
V. N.	3006	50.8	17.7	1800	62	37	99	1.67	13	103	1.74	31	418	7.06	56
J. F.	3477	53.2	19.7	1932	67	50	117	1.79	13	114	1.74	30	492	7.53	57
Mean	3270	59.6	19.6	2043	64	43	107	1.94	13	106	1.94	29	468	8.54	58
Boys 16 Years Old															
H. C.	2555	56.9	16.5	1838	45	43	88	1.96	14	83	1.85	29	361	8.04	57
J. D.	3483	65.1	21.2	2218	68	45	113	2.11	13	109	2.04	28	508	9.50	59
R. S.‡	4532	58.8	26.0	2373	83	54	137	1.78	12	137	1.78	27	683	8.86	61
C. L.‡	4334	51.1	24.2	2146	88	50	138	1.63	13	152	1.79	32	600	7.08	55
Mean	3726	58.0	22.0	2144	71	48	119	1.87	13	120	1.86	29	538	8.37	58
Entire Study Group															
Mean	3511	60.7	20.9	2128	65	44	109	1.90	12	116	2.01	30	503	8.70	58

* Calculated from standard food values (7–9).

† Calculated from standard tables of food values (7–9) with factors 4, 9, and 4, for protein, fat, and carbohydrate, respectively.

‡ Resident of Boys Republic longer than six months.

diets of the first group. Regardless of age, the percentages of calories from fat and carbohydrate in the individuals' diets were relatively constant, the means of 30 per cent for fat and 58 per cent for carbohydrate representing ranges of 27 to 34 and 55 to 61, respectively.

Many investigators have reported percentage distributions for the total intakes of protein, fat, and carbohydrate, and Widdowson (18) has pointed out that ratios between fat and carbohydrate consumption may emphasize differences between nationality groups. For the boys at Boys Republic the protein contribution was the same as that found for English boys (18) who, however, consumed 36 per cent of their calories as fat and 52 per cent as carbohydrate (Table 2). The diets of Australian boys (15) provided averages of 14 per cent of total calories from protein, 33 per cent from fat, and 53 per cent from carbohydrate. Considering the body weights of the groups of subjects, the findings compare favorably with the distribution of 15 per cent protein, 35 per cent fat, and 50 per cent carbohydrate recommended by Holt and Fales (23).

The mean daily intakes of vitamin A, thiamine, riboflavin, niacin, ascorbic acid, calcium, phosphorus and iron are given in Table 4 for each boy, each age group, and for the group of twelve boys. When both weight and age are considered, the mean daily in-

TABLE 4

Mean daily vitamin and mineral intakes of twelve boys during seven consecutive days

SUBJECT	AGE	WEIGHT	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID	CALCIUM	PHOSPHORUS	IRON
Boys 14 Years Old										
	yr. & mo.	*kg.*	*I. U.*	*mg.*	*mg.*	*mg.*	*mg.*	*gm.*	*gm.*	*mg.*
R. D.	14– 0	49.0	4512	1.7	3.2	15	92	1.8	2.2	14
E. P.	14– 6	51.9	4052	1.7	3.2	16	76	1.8	2.2	15
J. B.*	14–11	53.5	6519	1.8	3.6	18	104	2.0	2.4	17
H. M.*	14–11	64.4	8376	2.1	3.9	18	98	2.2	2.5	19
Mean	14– 7	54.7	5865	1.8	3.5	17	92	2.0	2.3	16
Recommended allowance, adjusted for age†			5021	1.5	2.0	15	90	1.4	1.4	15
Recommended allowance, adjusted for weight†			5380	1.6	2.2	16	94	1.4	1.4	15
Boys 15 Years Old										
A. B.*	15–10	46.0	5011	2.1	3.6	16	87	2.1	2.3	15
R. C.*	15– 9	52.6	6662	1.9	3.6	17	92	2.0	2.4	17
V. N.	15–10	59.2	4104	1.7	3.5	15	97	2.0	2.3	14
J. F.	15– 1	65.3	6159	2.0	3.7	19	104	2.1	2.7	18
Mean	15– 7	55.8	5484	1.9	3.6	17	95	2.0	2.4	16
Recommended allowance, adjusted for age†			5271	1.6	2.1	16	93	1.4	1.4	15
Recommended allowance, adjusted for weight†			5453	1.6	2.2	16	94	1.4	1.4	15
Boys 16 Years Old										
H. C.	16– 5	44.9	4395	1.5	2.4	16	98	1.3	2.0	15
J. D.	16– 4	53.5	7668	2.1	3.9	17	133	2.3	2.6	16
R. S.*	16–10	77.1	7263	2.3	4.6	20	164	2.6	2.9	20
C. L.*	16–11	84.8	7313	2.3	4.7	22	134	2.7	3.1	20
Mean	16– 7	65.1	6660	2.0	3.9	19	132	2.2	2.6	18
Recommended allowance, adjusted for age†			5521	1.6	2.3	16	95	1.4	1.4	15
Recommended allowance, adjusted for weight†			6073	1.7	2.5	17	101	1.4	1.4	15
Entire Study Group										
Mean, 12 boys	15– 7	58.5	6003	1.9	3.6	17	106	2.1	2.5	17
Recommended allowance, adjusted for age†			5271	1.6	2.1	16	93	1.4	1.4	15
Recommended allowance, adjusted for weight†			5633	1.6	2.3	16	96	1.4	1.4	15

* Resident of Boys Republic longer than six months.

† Recommended allowances were adjusted for age and weight, assuming a straight line relationship between values given by the Food and Nutrition Board for boys 14 years, 6 months old (means for boys 13–15 years) weighing 49 kg. and for boys 18 years, 6 months old (mean for boys 16–20 years old) weighing 64 kg.

takes of all minerals and of thiamine, riboflavin, and niacin for all subjects were approximately equal to or greater than the amounts recommended by the Food and Nutrition Board (19). Averages for age groups and for the entire group of twelve were all above the corresponding age recommendations. For the entire study group, whose ages ranged from fourteen to seventeen years, all mean intakes were equal to, or greater than allowances recommended for boys sixteen to twenty years old.

Review of the types and quantities of foods eaten by the boys showed that second and third helpings were frequent, but that vegetables and salads were often refused or avoided, probably a reflection of food habits at home.

Neither butter nor its substitute was included in the basic diet; although "luxury boys" were given butter, the majority of boys received the greatest quantity of pre-formed vitamin A in milk. Under these conditions, the calculated intakes represent a higher percentage of vegetable carotenoids than in the dietary distribution upon which the recommended allowances are based. The data for vitamin A portray the effect of a single food prejudice not only upon the intake of a nutrient for one day but also upon an average intake for a week. Spinach was served once during the seven days of study and increased the intakes of vitamin A for that day by 6000 to 8000 I.U. Of the four boys (Table 4) whose average daily intakes of vitamin A were below 5000 I.U., one (H.C.) ate only a small amount of spinach and the other three ate none. Since the utilization of carotenoids by the body is not clearly understood, the adequacy of some of the boys' intakes of vitamin A may be questioned.

Only one boy (E.P.) received appreciably less ascorbic acid than recommended by the Food and Nutrition Board, both on the basis of age and of weight. The same boy had the lowest intake of vitamin A. Apparently E.P. ate smaller amounts, than other boys his age and size, of the fruits and vegetables low in ascorbic acid which contributed almost as much ascorbic acid to the diet as did citrus fruits. A large part of the ascorbic acid in some boys' diets was obtained from raw potatoes and apples which they ate in generous amounts while working in the fields.

The boys' intakes of calories were higher than those reported for boys of the same age by some other investigators (Table 2), and their intakes of thiamine also were greater. Since thiamine is essential in the intermediary metabolism of carbohydrate, a better index of the thiamine adequacy has been sought by relating its intake to the number of non-fat calories. Although the twelve boys consumed high percentages of carbohydrate calories, their thiamine intakes ranged from 0.67 to 0.90 mg. per 1000 non-

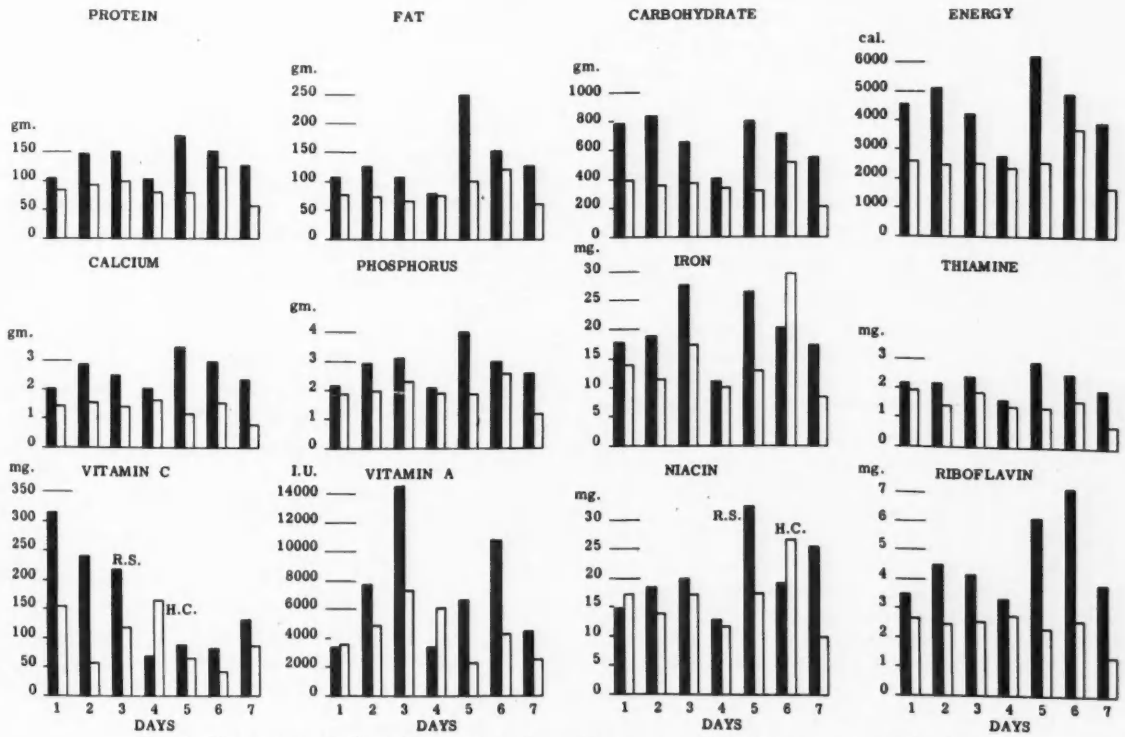


FIG. 1. *Nutrients in the food intakes of two boys sixteen years old during seven consecutive days.*

fat calories, considerably more than the 0.27 to 0.30 mg. Williams and Spies (24) suggested for adults.

The riboflavin intakes were ample in relation to the allowances recommended, ranging from 2.4 to 4.7 mg. per day. Two-thirds of the total riboflavin was contributed by milk and its products, and the only other significant amounts by cereal foods.

The intakes of niacin varied from 15 to 22 mg. daily. Greater quantities of niacin were contributed by cereal than by any other food, although important contributions were made by meat, milk, and fruits and vegetables other than those high in ascorbic acid.

The mean calcium and phosphorus intakes of the boys were approximately 50 per cent greater than the allowances advocated by the Food and Nutrition Board, and the phosphorus values confirm the belief usually accepted that since phosphorus is more abundant in natural foods than calcium, diets providing sufficient calcium will also contain adequate amounts of phosphrous.

Iron in the food intakes averaged from 14 to 20 mg. daily. Determination of the human requirements for iron has been complicated by the fact that only a small percentage of iron ingested is retained. Adolescent boys with normal capacities for absorbing and storing iron may not require such quantities as those given in Table 4. However, English workers (25, 26) have demonstrated that the iron of brown flour is present as insoluble ferric phytate. This iron and presumably the iron from similar unrefined cereals is unavailable, and, if consumed in large enough quantities, may interfere with the absorption of available iron. The fact that cereal foods provided the largest quantity of iron in the dietary at Boys Republic is no indication of the amount which was absorbed.

The day-to-day variation in food consumption is important in determining the consistency of dietary adequacy, especially with respect to energy and the nutrients which are not stored for use at other times. For all twelve boys, the highest daily caloric intake of the week occurred on either Saturday or Sunday. Intakes for six boys on both days were higher than on any other day, and part of the increase was traced to food brought by visitors. The tendency for children to eat more on week-ends than on school days was shown by Wait and Roberts (4). Widdowson (18) found that the highest daily caloric intake of individual children was often preceded or followed by the lowest. This compensatory tendency is observed in the caloric intakes of eight of the boys who ate less on the day preceding or following a day of high consumption. The daily intakes of all nutrients calculated are plotted in Figure 1 for the two boys who consumed the largest and smallest quantities of food during the study. Both boys were sixteen years old, but R.S. weighed 77.1 kg. and had lived at Boys Republic for twelve months; H.C. weighed only 44.9 kg. and had been a resident only two months. In general, R.S. ingested greater amounts of all nutrients than did H.C., but for both boys, intakes varied widely from day to day. For the large boy intakes of all substances except iron, ascorbic acid, and vitamin A fluctuated more than the intakes of H.C. The greater variation of H.C. in daily intakes of iron and ascorbic acid support other indications that he did not eat generously of the fruits and vegetables available.

SUMMARY

The general levels of nutrients provided by the food ingested by sixty-one adolescent boys in a corrective institution were calculated from records obtained during seven consecutive days in which all of the foods eaten by each of twelve representative boys were weighed carefully under supervision. The boys, fourteen, fifteen, and sixteen years old, were weighed and their heights measured. Intakes of energy, protein, fat, carbohydrate, vitamin A, thiamine, riboflavin, niacin, ascorbic acid, calcium, phosphorus, and iron were compared to the allowances recommended by the Food and Nutrition Board for boys of those ages and weights.

The results emphasize that: neither age nor weight, alone, can be used as the standard for dietary adequacy; food requirements during adolescence vary over an extremely wide range; food likes and dietary habits may result in inadequate nourishment; and omission from the dietary or failure to eat a single food may result in an undesirably low intake of a nutrient.

The data indicate that if institutions are to meet the nutritional needs of children under their care, they must recognize any unusual characteristics of the group and the importance of careful supervision of institutional feeding programs. Since community-supported agencies often are maintained on limited budgets which allow little flexibility, it is particularly important that they procure at least advisory assistance and consultation from specialists trained in nutrition to insure provision of adequate food intakes and conservation of resources. This report also emphasizes the great need for further investigation of feeding practices and food needs, especially during adolescence, with recognition of changing eating habits, food supply, and growth and behavior patterns.

REFERENCES

(1) Harrington, M. M., Cumbow, R., Thomas, R. U., Metz, H., Rutledge, M. M., and Macy, I. G.: Nutritional status of children. 9. Feeding practices in child-caring agencies: A cottage-plan home. J. Am. Dietet. A. 26: 241, 1950.

(2) Bureau of Human Nutrition and Home Economics: Family Food Plans for Good Nutrition. U.S. Dept. Agric. AWI-78. Washington: Govt. Printing Office, December, 1943.

(3) Moyer, E. Z., Beach, E. F., Robinson, A., Coryell, M. N., Miller, S., Roderuck, C., Lesher, M., and

MACY, I. G.: Nutritional status of children. 2. The organization of a survey of child-caring agencies. J. Am. Dietet. A. 24: 85, 1948.
(4) WAIT, B., AND ROBERTS, L. J.: Studies in the food requirement of adolescent girls. 2. Daily variations in the energy intake of the individual. J. Am. Dietet. A. 8: 323, 1932.
(5) KOEHNE, M.: The probable accuracy of dietary studies. J. Am. Dietet. A. 11: 105, 1935.
(6) LEVERTON, R. M., AND MARSH, A. G.: Comparison of food intakes for weekdays and for Saturday and Sunday. J. Home Econ. 31: 111, 1939.
(7) BUREAU OF HUMAN NUTRITION AND HOME ECONOMICS in cooperation with NATIONAL RESEARCH COUNCIL: Tables of food composition in terms of eleven nutrients. U.S.D.A. Misc. Pub. No. 572, 1945.
(8) BOYD, E. F., EADS, M. G., AND SANDSTEAD, H. R.: Food Value Tables for Calculation of Diet Records. Washington: U.S. Public Health Service, January, 1947.
(9) BOWES, A. DEP., AND CHURCH, C. F.: Food Values of Portions Commonly Used. 6th ed. Philadelphia: College Offset Press, 1946.
(10) MEREDITH, H. V.: The Rhythm of Physical Growth. University of Iowa Studies—Studies in Child Welfare 11: No. 3 (Feb.), 1935.
(11) COMMITTEE ON GROWTH AND DEVELOPMENT, WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION: Growth and Development of the Child. Part 3. Nutrition. New York: Century Co., 1932.
(12) HOLT, L. E., AND FALES, H. L.: The food requirements of children. 1. Total caloric requirements. 2. Protein requirement. 3. Fat requirement. 4. Carbohydrate requirement. Am. J. Dis. Child. 21: 1, 1921; 22: 371, 1921; 23: 471, 1922; 24: 44, 1922.
(13) COMMITTEE ON GROWTH AND DEVELOPMENT, WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION: Growth and Development of the Child. Part 3. Nutrition. New York: Century Co., 1932, p. 408.
(14) COMMITTEE ON GROWTH AND DEVELOPMENT, WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION: Growth and Development of the Child. Part 3. Nutrition. New York: Century Co., 1932, p. 408.
(15) WARDLAW, H. S. H., AND WHITE, C. J.: The diet of some Australian schoolboys. Australian J. Exper. Biol. & M. Sc. 18: 9, 1940.
(16) WIEHL, D. G.: Medical evaluation of nutritional status. 15. Caloric intake of high school students in New York City. Milbank Mem. Fund Quart. 22: 5, 1944.
(17) WIEHL, D. G., AND BERRY, K.: Medical evaluation of nutritional status. 16. Essential nutrients in diets of high school students according to sex and age for different cultural groups in New York City. Milbank Mem. Fund Quart. 23: 353, 1945.
(18) WIDDOWSON, E. M.: A Study of Individual Children's Diets. Med. Research Council Special Report Series No. 257. London: His Majesty's Stationery Office, 1947.
(19) FOOD AND NUTRITION BOARD: Recommended Dietary Allowances, Revised. National Research Council Reprint and Circ. Series No. 129, 1948.
(20) KEYS, A.: The calorie requirement of adult man. Nutrition Abstr. & Rev. 19: 1, 1949.
(21) WILDER, R. M.: Misinterpretation and misuse of the recommended dietary allowances. Science 101: 285, 1945.
(22) MACK, P. B., SHEVOCK, V. D., AND TOMASSETTI, M. R.: Comparison of meat and legumes in a controlled feeding program. 1. Dietary plan. 2. Medical, dental, and laboratory observations. 3. Discussion of findings. J. Am. Dietet. A. 23: 488, 588, 677, 1947.
(23) HOLT, L. E., AND FALES, H. L.: The food requirements of children. 5. Percentage distribution of calories. Am. J. Dis. Child. 24: 311, 1922.
(24) WILLIAMS, R. R., AND SPIES, T. D.: Vitamin B_1 (Thiamin) and Its Use in Medicine. New York: Macmillan Co., 1938.
(25) WIDDOWSON, E. M., AND MCCANCE, R. A.: Iron exchanges of adults on white and brown bread diets. Lancet 1: 588, 1942.
(26) MCCANCE, R. A., EDGECOMBE, C. N., AND WIDDOWSON, E. M.: Phytic acid and iron absorption. Lancet 2: 126, 1943.

Vitamin Retention after Electronic Sterilization

Vitamins have proved unexpectedly resistant to radiations used for sterilizing food, according to Dr. Wolfgang Huber, Vice-President, Electronized Chemicals Corporation, New York, who spoke to the Division of Biological Chemistry at the April meeting of the American Chemical Society in Philadelphia.

In experiments with a Capacitron, a high-voltage electron machine, Dr. Huber and his associates have found that short but tremendously powerful bursts from the machine kill bacteria and spores without harming the taste, odor, or appearance of food. Such tissue components as structural proteins, carbohydrates, and fats have resisted the radiation, and recent tests have shown that the Capacitron does not appreciably decrease the vitamin content of food.

Dr. Huber pointed out the importance of environmental conditions in experiments dealing with the effects of radiation on biologic systems, and stressed that the use of electrons for food sterilization requires the testing of the radiation effect on essential nutrients as well as structural cell components under conditions that are identical to those encountered in the cell of the product to be treated.

Because experiments with pure vitamins do not represent conditions of environments encountered in the cell, the results are misleading. The vulnerability of pure vitamins, Dr. Huber continued, is due to the fact that the material in which they are dissolved becomes electrically charged and transmits to the vitamins undiluted electro-chemical forces which are chemically disruptive.

In the case of ascorbic acid, Dr. Huber reported that in a water solution, 35 per cent of the pure vitamin was destroyed, but when an orange juice concentrate was irradiated, only 5.7 per cent was lost. Similar experiments with niacin gave similar results.

Emotional Factors in Eating and Obesity[1]

SPENCER BAYLES and FRANKLIN G. EBAUGH

Department of Psychiatry, Colorado Psychopathic Hospital, University of Colorado Medical Center, Denver

FROM the thermodynamic point of view, the subject of obesity and its treatment is very simple. Obesity is the direct result of greater intake than output of energy, and excluding rare cases of lipodystrophies, treatment is nothing more than the prescribing of a diet to reduce energy intake below energy output (1). This technique, which should be as simple as firing a furnace, has only one defect. In most patients, it just doesn't work.

Dietitians and physicians have for years assumed that when one had calculated an adequate diet that was moderately attractive, all one needed was a printing machine and a dietitian to spend a few minutes with each patient to explain the instructions. The result has been that, almost without exception, these obese patients have had a terrible time following the diet. The published figures for success of this method are distressingly low (2, 3).

The question for discussion is this: Why should this simple method be so difficult? If we restate the question, we might ask: Why is it so difficult to persuade the obese patient to reduce his food intake? We now have a clue as to where to search for an answer.

We all know that the average person, particularly the slightly pudgy housewife, is able to follow easily the severely restrictive diets published in the newspapers and readily loses a few pounds so as to better fit the latest fashions. Since the obese patient has trouble following the more adequate diet prescribed by the physician, might it not be safe to suggest that there is something somehow different about the obese person's appetite? Hoelzel (4) postulates that appetite depends on the specific body needs. If we accept this idea as true in normal persons, are we forced to assume that a different factor is operating in the obese person?

A PERSON'S NEEDS

A basic postulate of psychiatry is that all human behavior is explanable and understandable in terms of certain fundamental needs. Let us see if this can be applied to the problem of obesity. If the obese person's appetite is so great that he must take in more food than is necessary for metabolic requirements, then it follows that the obese person must have the food for needs other than metabolic. Someone may well ask: Well what else is food for? It is apparent that here we must leave the simpler problems of calories, fats, and proteins to consider human needs in a larger sense. We must investigate the needs of a person as well as just the needs of a body.

All persons have some needs for pleasure. It is impossible to find a person who does not enjoy something in his life. He may, paradoxically enough, even enjoy pain, but we inevitably find that he needs to get pleasure from something. Those of you who happen to be good cooks as well as dietitians realize full well the great pleasure that can be gained from a well prepared, well served repast, and those of you who know people also realize that some persons have little pleasure in life apart from eating. Thus the most obvious non-metabolic satisfaction to be derived from food is the simple gratification of a need for pleasure.

If eating has a meaning of pleasure, in addition to nutritional significance, then we may ask if there are other non-nutritional meanings to this universal activity. We have seen many men, once poor and hungry, to whom plenty of good food indicates success. To a dissatisfied housewife, eating may mean diversion and respite from her otherwise monotonous day. To any one of us the invitation to eat may mean social acceptance. In our culture as in all cultures, the giving and taking of food has deeply symbolic meanings of friendliness and affection (5). Our inevitable emotional response to a dinner invitation is, "He wants to give me food, he likes me." This equation of food and affection or love is a universal human concept.

This symbolization of food as love is not strange if we consider the infant's early months when he receives food and love from his mother in inseparable fashion. It is also not too difficult to understand how excessive significance can be given to food and eating by a child whose mother is unable to show him love except through feeding him. Food normally relieves the tension of hunger. In the latter instance, food

[1] Presented at the 32nd Annual Meeting of the American Dietetic Association in Denver, on October 11, 1949.

also serves to relieve the tension of feeling unloved.

Psychiatric research shows that tension, as it is ordinarily described in human beings, is a non-specific indicator of unsatisfied needs. The need may be for success, security, love, food, or whatever. We have observed but cannot entirely explain the fact that food will temporarily relieve tension from sources other than metabolic ones and so, not infrequently, we find food being used to relieve the tension of emotional deprivation. Food can thus have the meaning of a medicine, perhaps a narcotic, to deaden the pangs of a frustrated life.

NON-METABOLIC NEEDS OF THE OBESE PERSON

It is apparent from this discussion that food *does* have uses that are non-metabolic if not non-nutritional. Since the obese person continually takes in more food than is necessary for metabolism, it seems that the search for the causation of obesity should be sought in these non-metabolic needs for food.

If this hypothesis is correct, then we should be able to find obese patients who eat because they have no other sources of pleasure, who eat because they are bored, who eat because it gives them social acceptance not otherwise available, who eat to relieve a feeling of tension, or who eat because food symbolizes to them the love and affection they desire, need, and cannot find. We have seen all these and more; the recent literature is full of such reports (1, 2, 6–8).

We might summarize the above by suggesting that the obese person uses food in an attempt to satisfy non-metabolic needs and, therefore, is always taking in more food energy than he can utilize. Now if these ideas be true, it should follow that they have some means of utilization in the treatment of the patient. Any therapy may be expected to fail if it attempts to satisfy only the metabolic needs of the body and takes no cognizance of the non-metabolic needs of the person. Deprivation of a means of satisfaction will produce tension, and tension following deprivation of food will be interpreted as need for food. The obese patient placed on a restricted diet will, therefore, soon complain of ravenous appetite and will, in the absence of other sources of satisfaction or of insight, attempt again to relieve his tension the only way he knows, by eating.

TREATING THE CAUSES OF OBESITY

Freed (1), in an otherwise excellent article, concludes that the only way to treat this tension masquerading as appetite is by the use of drugs, chiefly amphetamine sulphate. We could have no objection to this theory if the drug could be depended upon to be effective as long as it was used, and if we intended for the patient to continue to use the drug forever. We do object to symptomatic therapy, however, when it is possible to apply a therapy based on etiology. In the case of the obese person, this means that we should try to discover and treat the cause of the non-metabolic need for food.

This imposes obvious responsibilities. A history of food intake as currently used is interesting but, in the case of most obese patients, of limited value. It is obvious from the rolls of fat that the person has eaten more than he has used. If a dietary history is to be of significant value in treatment, it must give clues, if not a direct answer, to the following: Why does this person eat more than is metabolically necessary, or stated differently, what are this person's non-metabolic needs for food?

Once this question is answered, and the answer may be well guarded by the patient, then the patient, either on his own, or with the help of the therapist, can open his eyes to the use he is making of food and can begin to find more appropriate and less damaging means of satisfaction. It will be true that with certain patients the search for etiology will show that food is satisfying a need that has no other possibility of satisfaction, and with these patients all concerned should recognize that deprivation of a person's only source of satisfaction is bound to be unsuccessful.

It would seem to follow that the calculation and prescription of a diet may not be the most important factor in treating the obese patient. Since this is an apparently heretical statement, we should be asked to submit some proof or support of the contention.

Nicholson of Duke University has seen fit to test this very thesis (2). In his study, which we commend to all of you, he has compared the results of treatment of obesity by varying methods. One group was treated in the conventional fashion. After a careful medical work-up, a diet was calculated and the patient referred to the nutritionist for instruction. In a second group, after the same work-up, no diet was prescribed. The patient was referred to a nutritionist only for answers to questions about a normal diet, and the patient was given the opportunity for a few hours of discussion about whatever problems concerned him. Successfully treated cases were 2.5 times more numerous in the latter group.

We repeat, then, that the diet may not be the most important item in the treatment of obesity.

THE NUTRITIONIST'S ROLE IN TREATING OBESITY

Does this mean that the nutritionist has no place in the treatment of the obese person? To be realistic, we immediately recognize that the nutritionist must continue to play a major role, since we do not have enough psychiatrists or psychiatrically oriented physicians to duplicate the conditions of Nicholson's experiment on any wide scale.

Since this is the situation we must face for a while, two courses of action which are available for you as nutritionists.

You may say that the situation is too difficult to change and so continue to follow orders to the letter, taking food histories in such a way as to trap or

trick the patient into admitting how much he really eats, handing out diet sheets, explaining them, and reprimanding the poor patient when he comes back for having gained weight, because he failed to follow your perfectly clear instructions.

THE NUTRITIONIST AS CRUSADER

The second course that we hope you will adopt is is to become a crusader. Give more than is required, accept being slapped down from time to time, but get in and fight to develop healthy insight in patient and physician.

Having decided to be a crusader, the starting point is clear. The dietary history must be redirected towards finding out why the patient eats more than he metabolizes, and, particularly, what food means to him. With these facts in hand, the patient will at times be able to make changes himself. When the need for food is an expression of need for affection, it may be that the nutritionist's genuine interest in the patient as a person may provide an example to show him that it is possible to get some satisfaction from relations with people.

How are the patients to be handled differently? For some diet therapists no change will be necessary. For others, increasing understanding will help them see what to do. If the nutritionist understands what food means to the patient, she will plan his diet with greater consideration for his total needs.

If she recognizes that eating is his only source of pleasure, then she will understand the need of manipulating the diet to accomplish weight reduction, yet permitting as much pleasurable eating as possible, and helping the patient anticipate that the desire for enjoyment will be a continual source of distraction from dieting.

If eating relieves boredom, the nutritionist will help the patient to see what he is doing and let the patient do what he can to face the boredom and let him consider what, if anything, he can do to change the situation.

If the overeating is an occupational problem, the nutritionist will help the patient to see how the occupational responsibilities can be met while the patient eats less.

THE NUTRITIONIST'S OPPORTUNITIES

As the nutritionist's insight increases, she will discover more and more instances among her patients where a person eats because he is unhappy. She will also see after a few tries that forbidding any part of his eating will make the patient more unhappy. She is thus in conflict between trying to help him and not wanting to make him any more unhappy. She realizes that he is a person who needs help of some kind and is receiving it from no one. She suspects that psychotherapy might help, but the patient is not, cannot, or will not be referred to a psychiatrist.

Particularly in the case of a child, she may conclude that no one is going to help this poor miserable person, so she will, and proceeds blindly forward into more difficulties and complications than she ever suspected, and certainly more than she is prepared to handle.

In this, as in other types of therapy, the therapist functions most effectively as long as he bears in mind his limitations. This applies to psychiatrist, social worker, and so on, as well as to nutritionist. The nutritionist's function is to give advice, information, and direction about normal feeding and the modifications made necessary by various types of pathology. Her training has fitted her for this job. She is not prepared to undertake the difficult job of formal psychotherapy. Does this mean she has nothing to offer her patients with problems? We will attempt to discuss the great opportunity she has by taking up the contributions by patient and therapist at various stages of therapy.

THE INITIAL IMPRESSION

The patient has been referred to her after a careful study which has revealed he is "too fat." He has been criticized and told that he eats too much; he is angry and resentful at being criticized. He is tense, uncomfortable, and feels guilty since he senses dimly or acutely that all this is true, that actually he is too fat and does eat too much. He is afraid, not knowing the consequences. His impulse is to get something to eat as he always does in times of stress, knowing that "something in his stomach" will make him feel less tense. He expects not to like the d'et therapist, because he suspects she is a mean, sadistic person who is going to deprive him of this great and perhaps only satisfaction of stuffing himself.

He enters the office with resentment, anger, feelings of guilt, and unrealistic expectations. His feelings are exactly those of the little boy who is caught in the midst of robbing the cookie jar and is being sent to mother for punishment.

It is at this moment that diet therapy begins. In her opening sentences, the nutritionist will make commitments which will determine the patient's expectations for the rest of the contact.

The patient expects a dietitian to be punitive and interested only in depriving him of his one method of solving problems. If she opens the interview by saying, "I am going to give you a restricted diet that you must follow," and gives him a printed sheet listing practically nothing to eat, his expectations will be confirmed. Any further effort on her part to help or direct him will meet the feeling that she is a basically unfriendly, depriving, punitive parent figure.

What, on the other hand, is the patient's feeling if the opening comments can convey the impression that the nutritionist is giving him her help in assisting him to modify his food intake so as to meet the limitations imposed by his physical condition?

By so doing she shows him her interest in him as a person, her recognition of his own particular problems, and she implies that it is his responsibility to participate and make use of the help she offers. Perhaps more important, she indicates that she regards him as an independent individual, who has the right to disregard the offer of help if he wishes, but who has the ability to utilize her assistance if he desires.

It is to be expected, of course, that some patients will refuse the offer of help and will decide to take the consequences of their present eating habits. However, one is entitled to ask what would be accomplished by trying to force such a patient to follow a diet. If he is determined not to follow advice, then one may rest assured that he will not. The point to bear in mind, however, is that it is the nutritionist's attitude and comments that largely determine what the patient will decide about following her directions. If the nutritionist offers her services, the patient is able to regard her as a source of help, whereas her telling him to give up his dearest pleasures will encourage him to select her as a target for the anger and resentment mentioned before.

A nutritionist may well ask, "What do I say to convince the patient that I am offering help, not depriving him? What do I say to convince him that he has responsibility in the business of getting well? What do I say to convince him that he is a free agent with the ability to use my help if he wants to?" The answer to all of these questions is simple and yet impossible for some would-be therapists. The only requirement of any consequence is to believe it.

If a nutritionist believes these points and respects the patient as a person, then she will have no difficulty in letting him know how she feels about him. If, on the other hand, the nutritionist regards the patient as an inferior being who needs to be directed and instructed by a superior person such as herself, then no matter what words she uses, the patient will sense her attitude and respond accordingly in a negative way.

HELPING THE PATIENT TO UNDERSTAND

In the first few comments, diet therapy begins by the nutritionist's indicating her role in the relationship and implying her expectations of the patient's participation. The next step is to help him to see why he is overeating, to see the non-nutritional uses he is making of food. As a help in showing him what is expected, it is sometimes useful to help him discuss that impulse to get something to eat just before he came to the office and to help him elaborate how at that moment he was anxious, upset, a little scared. He may even be able to mention the resentment and guilt about being criticized.

Then, in working with him, the nutritionist will help him to discover similar motivations behind his excess eating, and help him to see other instances where his eating serves to relieve tensions other than hunger.

She will then proceed to work with him to establish realistic modifications of his eating habits, to reduce the caloric intake to acceptable levels, while insuring adequate nutrition otherwise. Meanwhile, the nutritionist lays the foundation of understanding by which he will be able to manage his own weight after the inevitable termination of her contact with him. As she works out plans and explains her modifications, she is unobtrusively teaching nutrition in the most effective way—by confronting him with what he does wrong, pointing out the correct answer after appropriate discussion of why one pattern is wrong and another correct. As Pope once said, "Man must be taught as if one taught them not. . . ."

TERMINATING THE CONTACT

We spoke of inevitable termination of contact. This is but the logical extension of our respect for the individual; as we expect him to participate in the dietary therapy, as we expect him to be able to utilize advice, so do we expect him to reach a point where he can continue on his own. By this we do not mean to give him a list of diets to follow henceforth, but we expect him to learn enough after his contact with the nutritionist to maintain an optimal weight, while he maintains adequate nutrition. To do this he never needs to count a calorie, but he does need the insight to see why, at times of stress, he may eat more than necessary, and he needs the information and understanding to modify his diet safely until the scales tell him he is on the heathful track.

THE PROBLEM OF THE DIABETIC PATIENT

It has occurred to us in preparing this discussion that the above comments do not apply exclusively to the management of obesity. It seems the same principles must apply to any instance of therapy where one person attempts to influence the eating habits of another to improve the latter's health. None of us uses food simply for metabolism. Whenever one attempts to modify food intake, it must be borne in mind that one is manipulating a vital factor with many ramifications in the emotional life of the person.

This is certainly true with diabetic patients, who so often just won't stay on their diets. It will be a great saving of time for all concerned if the nutritionist and physician will help the patient discover why it is so difficult for him to modify his food intake.

It is not entirely within our province to speak of the next matter, but from a psychiatric point of view we perhaps can suggest some thoughts for consideration. It has seemed to us that the recently discussed free diet in managing diabetes is, psychologically speaking, a potentially healthier method. The patient is permitted a much more mature independence in a large area of his daily living.

We have often suspected that many of the regressive aspects of the so-called diabetic personality are related to the dietary management of the traditional school. This time-honored method resembles nothing so much as the over-protective mother's attitude toward a three-year-old. The result in the child may be either a passive, compliant little soul who goes through life eating the right things to please Mama, or a rebellious little "hellion" at meal time, demanding and receiving the whole family's attention. While these reactions are relatively appropriate for three-year-olds, it is unfortunately true that the same over-protective parental attitude of physician and nutritionist encourages and produces similar regressive phenomena in adults. As psychiatrists, we would prefer to see the patient given the necessary information and then the responsibility to take an adequate normal diet, which he will select and regulate in the mature independent fashion of other adults.

Regression and dependency should then decrease in significance in the "diabetic personality."

REFERENCES

(1) FREED, S. C.: Psychic factors in the development and treatment of obesity. J.A.M.A. 133: 369, 1947.
(2) NICHOLSON, W. M.: Emotional factors in obesity. Am. J. M. Sc. 211: 443, 1946.
(3) TRULSON, M., WALSH, E. D., AND CASO, E. K.: A study of obese patients in a nutrition clinic. J. Am. Dietet. A. 23: 941, 1947.
(4) HOELZEL, F.: Appetite and obesity. Am. J. Digest. Dis. 12: 156 (May), 1945.
(5) MEAD, M.: Cultural patterning of nutritionally relevant behavior. J. Am. Dietet. A. 25: 677, 1949.
(6) BRUCH, H.: Obesity in childhood and personality development. Am. J. Orthopsychiat. 11: 467, 1941.
(7) BRUCH, H.: Food and emotional security. Nervous Child 3: 165, 1944.
(8) BRUCH, H.: Dietary treatment of obesity in childhood. J. Am. Dietet. A. 20: 361, 1944.

Measurement of Bone Density

Fewer bow legs, stronger skeletons, easier pregnancies, and better health at all age levels are some of the possible results of using a technique developed for measuring bone density in living subjects, according to Dr. Pauline Beery Mack. As recipient of the Garvan Medal, Dr. Mack told the April meeting of the American Chemical Society in Detroit that many cases of senile demineralization resulting from non-healing fractures and shortened spinal columns, probably could have been avoided had the patient's mineral history been followed earlier.

She explained that the mineral matter in bones is not rigidly fixed, as once was supposed, but is coming in and going out of the skeleton at all times. The skeleton serves both as a framework for the body and as a storehouse for minerals needed for numerous body processes. If the dietary intake of calcium and other minerals is adequate both for producing and maintaining strong bones and for performing other bodily functions, then the mineral well-being of the body is assured unless some pathological condition interferes with proper utilization.

Dr. Mack traced the development of the equipment and technique which make possible the quantitative measurement of the density of bones in living persons from X-ray film. Before the introduction of this method, the only way to appraise bone density was through visual inspection of X-rays, which was highly subjective and inaccurate. The new technique will pick up minor changes in bone density within two or three days from the time that some change in diet or therapy has been instituted, she reported. Because the equipment is expensive and well trained operators are required to run it, Dr. Mack anticipates that laboratories will be built in different parts of the country to which X-ray films may be sent for evaluation by public health agencies, physicians, and hospitals.

As an example of the technique's application, Dr. Mack cited its use with infants and young children. In a young child, the skeleton must (a) grow; (b) take on new features which bring it closer to maturity; (c) deposit sufficient mineral to insure bone strength and resistance to fracturing; and (d) have sufficient mineral in addition to keep the mineral content of the blood up to the level needed for proper functioning of nerves and muscles and for many other purposes.

Visual inspection of X-rays will not show demineralization until actual rickets have occurred, but by use of this "densitometric x-ray tracing method," extremely minor degrees of mineralization can be detected. Thus dietary or therapeutic treatment can be applied immediately, thus saving a distorted chest and head, bowed legs, stunting, or easy fracturing—whichever type of malady follows as the outcome of poor skeletal mineralization in infancy.

Young children are not the only ones whose skeletal mineralization should be measured periodically by this X-ray densitometric method. Children at any age may suffer many maladies resulting from consuming too little milk and other foods which provide minerals. Adults also need proper mineral intake. Pregnant women; men undergoing heavy physical labor, particularly indoors where there is no sunlight to help retain what calcium is consumed; and aging persons are particularly vulnerable in this respect.

A Pattern for Planning Curriculum

HILDA TABA, BONNIE F. BEILFUSS,
CHARLOTTE LUDWIG, and EVELYN L. PEARSON

THE dietetic internships represent a pioneering field in education. The objectives of the internship are unique in that they seek to combine post-graduate education with practical experience. Since the establishment of these courses, they have been under continuous study and revision in an effort to meet most adequately the needs of the profession.

In 1945, the Professional Education Section of the American Dietetic Association developed a tentative outline for class instruction. This material has been useful, but it has seemed desirable to revise it in the light of more specifically defined objectives.

The services of Dr. Hilda Taba, Director, Center for the Study of Intergroup Relations, Department of Education, University of Chicago, were obtained to advise the Association in methods of curriculum planning. Workshops have been conducted under the guidance of Dr. Taba at the American Dietetic Association conventions for the past two years. At the first workshop specific emphasis was given to methods of stating objectives. In the interim, directors of internships submitted objectives for various units of instruction. The Professional Education Section compiled these for discussion at the Denver meeting. It was recommended that a committee of representatives of approved internships in the Chicago area develop sample procedures for curriculum planning which, it was hoped, would be used by other groups to develop other sections of curriculum. Accordingly, a two-day workshop was held under the direction of Dr. Taba. A partial statement of general needs and objectives which apply to the entire curriculum and sample drafts of units in administration and nutrition were developed.

GENERAL NEEDS

The internship directors, at the national meetings, had defined some gaps in the training of dietitians. Consideration of these comments, which are really general needs, is necessary in making plans for curriculum improvements. Among those stated were:

(a) Students need to improve their ability to apply general knowledge to specific situations.

(b) Students need to learn how to relate facts to each other. At present they tend to acquire specific detail which they cannot translate into general principles.

(c) Students need to develop ability to consider several conflicting factors in making decisions. At present, these decisions need to be made by a given routine. The social consequences of decisions, such as the cultural factors in food appeal, or the morale of the employees and clientele, especially, tend to be overlooked.

The procedure used by the Chicago workshop is one which might be useful for other groups. The participants outlined first the general steps in curriculum making, so that the task for the two days was clear. The group then developed each of the steps separately, modifying the outcomes of the preceding step while working on each successive point. The final job was to put the unit outline together in a completed form and to write the appropriate explanations and instructions for each step.

STEPS IN CURRICULUM PLANNING

Curriculum planning involves four steps. If these steps are followed, a more complete and concise curriculum will be evolved. In this way, some of the omissions and overlapping of material which are common problems in training programs should be eliminated. Also, it is possible to relate the content and learning activities more consistently to needs and objectives.

I. *State needs.* To discover needs one must diagnose. This can be based on investigations, or at least on an analysis of recognized gaps and deficiencies. The needs listed in this article came from directors' statements of recognized gaps.

II. *State objectives.*

A. General objectives. The workshop formulated the following general objectives of training to serve as a guide in stating specific needs and objectives:

1. Ability to translate previously acquired knowledge to institutional situations.
2. To learn to accept responsibility for decisions which must be made.
3. To develop ways of dealing with problems of socialization, e.g., making the employee feel an integral part of the organization.
4. To develop an experimental attitude

toward all processes involved in the job.
5. To develop professional integrity, the desire to grow professionally and a loyalty to the ideals of the profession.
6. Ability to state information, instructions, and directives clearly.
7. To develop skills necessary to discover, analyze, and correct professional, administrative, or personnel problems that hinder the efficiency of the organization or of the individual.
8. To develop capacity to work with other people without being personally threatened by group decisions which deviate from personal ideas.

B. Specific objectives were grouped into the four categories worked out at the national meetings:
1. Principles, concepts, or facts needed. This aspect of objectives is defined as possession of facts or knowledge which can be recalled or used when needed.
2. Skills, or methods and ways of doing things.
3. Judgments or ways of thinking, such as application of previous knowledge to institutional situations.
4. Attitudes or appreciations, such as appreciation of professional ethics.

III. *Develop the curriculum content* or subject matter which will satisfy objectives and fit the needs. This step involves three sub-steps.
A. Formulate the principles or ideas that need to be taught. It is essential to put down clearly a half dozen or so main ideas or understandings that the specific unit is supposed to teach. These ideas should govern the selection of content.
B. Select the examples of content which will make the ideas clear. Check examples to make sure essential features of the idea are covered, and especially to include the contrasting extremes. This will assure coverage, while allowing the teacher to achieve her ends with fewer details.
C. Organize the selections by topics so that it becomes a topical teaching outline. Use examples to fill in the content in appropriate places.

IV. *List the learning activities* by which the content or subject matter can best be taught. In deciding on these, it is important to think of the sequence in which students learn best and which carries them step by step to the desired learning.

The Chicago workshop group developed units in portion control and modification of the normal diet, applying the principles and points of the above outline. The sample draft which is presented below illustrates how the four steps in curriculum planning were followed in developing a unit.

PORTION CONTROL

I. *Needs.* In order to estimate the quantities of foods needed to serve numbers of persons and to control the food cost, a method of determining the correct size of serving portion for each class of foods is needed.

II. *Objectives.* These apply strictly to portion control, but are classified into four general headings used in the study.
A. Principles or concepts needed.
1. Knowledge of portions in relation to standard measures and weights.
2. Other principles or concepts are stated under II of the general outline above.
B. Skills
1. Converting portions into bulk and vice versa.
2. Making analysis of portion cost of menus.
C. Judgments or ways of thinking.
1. Ability to evaluate conflicting factors in making decisions about portioning.
2. Ability to derive general principles of portioning from studying specific cases.
D. Attitudes and appreciations.
1. Willingness to accept a flexible and varied means of standardizing portions.
2. Acceptance of differences in food habits that geographic locations, ethnic and religious backgrounds introduce, and the willingness to make appropriate adjustments.
3. Understanding of the need for establishing standard portions.

III. *Content Outline.* At present, the curriculum is overcrowded with details which prevent students from acquiring the knowledge of fundamental principles. In order to have a basis for a more economical selection of details to be taught, it is necessary: first to formulate the general principles that need to be learned; second, to select the content details which are most pertinent to learning, stating those principles; and then to organize those details into the topics for teaching. This was the procedure used in the workshop with the following results:
A. General principles of portion control.
1. Portion size must be decided upon basis of these factors which must be considered equally.
a. Nutritional adequacy and eye appeal.
b. Costs.
c. Meal pattern for the day.
2. Different food items have different ac-

ceptabilities, hence require different apportioning, e.g., rutabagas preferred less than peas.

3. Different regions, ethnic and religious backgrounds, have different acceptabilities for food items, and therefore, affect portioning, e.g., different preferences in the East and Middle West.
4. In order to serve standard portions, one needs to use standard serving utensils or measures.
5. Standard portions should be such that they can be converted into bulk measures or weights or vice versa by use of conversion tables.
6. There is a variety of ways to arrive at a standard measure.

B. Sample content to teach principles. In order to use minimum detail with maximum teaching value, it was decided to select examples on two bases: first, to represent maximum variation in methods used; and second, to include least exact and most exact methods.

1. Sample for principles A-1 and A-2 (above).
   a. Meat: There are limits to size because of expense. Size of serving of meat is important to clientele. There is a lower limit in size for serving of meat as related to nutritional adequacy and an upper limit as to cost.
   b. Turkey versus steak: The same weight of steak looks small in comparison to turkey.
   c. Cabbage: Cost limit is minimum, nutritional value is high; there are many ways of serving, but eye appeal is limited.
   d. Hot breads, pies, and other sweets: An excess is nutritionally harmful, cost is not forbidding, eye appeal is strong.
   e. Liver: Nutritional value is high, acceptability is low, tends to be traditionally considered by dietitians apart from its acceptability.
2. Sample for principle A-3 (above).
   a. Pork: Low acceptability in the East, high in West and South, unacceptable to Orthodox Jews.
   b. Grits or blackeyed peas: High acceptability in South, not elsewhere.
   c. Fish: Good acceptability on coasts or Great Lakes region, not inland; usually served on Friday for Catholics.
   d. Highly seasoned foods: Popular in Southwest, not in other regions.
   e. Kidney, tripe, and so on: Low acceptability to most people; used by some Middle Europeans and the English.
   f. Roasts: High acceptability to Anglo-Saxons, much less to other groups.
   g. Rural or urban pattern of acceptability is influenced by availability, i.e., avocados are used in rural places where grown and in urban centers almost anywhere.
3. Sample for principles A-4, A-5, and A-6 (above). On the basis of these two criteria, seven examples were chosen. These samples or their alternatives are sufficient to teach the above principles.
   a. Stew (meat, vegetables, and potatoes): Serving with a spoon or ladle is semi-exact.
   b. Ice cream: Serving with dipper or cut of bricks is semi-exact; use of soufflé cups is exact.
   c. Butter or bread: Cutting or slicing with mechanical slicer is exact.
   d. Pie or cake: Number of pieces to a standard unit is semi-exact.
   e. Canned fruit: Consider number in a can, e.g., number of peach halves or number of plums.
   f. Poultry: Dividing dark meat and light meat, sliced parts and extremities, by eye is not exact.
   g. Shrimp cocktail, cookies, apples, and so on: Serving by count is exact.

C. Converting the examples into a topical outline. To develop a content outline, formulate questions to pull content together. Sample questions are stated with learning activities in the accompanying box.

1. Questions stimulate thinking by the students.
2. Questions combine ideas that otherwise are apt to be scattered.
3. Questions permit a procedure where students and teacher can tie in previous experience.

IV. *Learning Activities.* The content outline above does not give the best teaching outline; it needs to be outlined with learning activities. There are several ways open to teach. For example one can teach how to develop a standard measure in four ways:

A. Books studied.
B. Instruction by the teacher.
C. Report by the student of what she knows from previous observation.
D. Observation and practice by the student.

The last two were chosen in this content outline developed at the Chicago workshop and given here

because they permitted the use of previous experience and were apt to teach critical thinking in addition to knowledge. Also, this procedure is most economical in that it allows the instructor to skip over what the student already knows and concentrate on those activities which are unfamiliar.

FUTURE PLANS FOR DEVELOPING CURRICULUM OUTLINES

Sample drafts of the unit on portion control given in this article and one on modification of the normal diet were sent to internship directors to be used as guides in developing curriculum outlines. A completed unit outline contains only:

I. Statement of needs
II. Statement of objectives
III. Content outline
IV. Learning activities

Parts A and B of Section III are omitted since they are the preliminary steps in the process of arriving at the topical teaching outline.

The internships will submit the curriculum outlines which they plan to area chairmen for compilation. The Chairman of the Professional Education Section will review the material and present the resulting proposed curriculum to course directors at the next annual meeting. It is hoped that through this method a satisfactory curriculum guide for dietetic internships will be available in the near future. It is recognized, however, that curriculum construction is a continuous process. Constant evaluation and revision are required.

COMBINING CONTENT OUTLINE III (C) AND LEARNING ACTIVITIES IV

Content Outline	*Learning Activities*
1. How can one develop a standard portion and what characteristics does each have? *Typical Samples* Serving stew Serving ice cream Cutting butter Cutting pie or cake Serving canned fruit Serving poultry Serving shrimp	1. Students tell what: They know about how items are portioned. They observed about items which are not clear or not known to them.
2. How does one convert bulk measures into individual portions and vice versa? How do you convert the purchase unit into dippers or vice versa? (Use all samples in above list.)	2. Students write on what they know about bulk measures used for items under 1, and convert each into portions.
3. What are some of the general points about portioning? Differences in exactitudes in measures—samples: meat, salads, stews, count items.	3. Conduct classroom discussion.
4. Which important factors need to be considered in portioning, and how are they applied? a. Is the portion nutritionally adequate? b. Does it have eye appeal? c. How much does it cost? d. What is its relation to the meal pattern for the day? e. Which geographical region, and which ethnic and religious groups are you serving? The above factors need to receive equal consideration. How are the above factors applied? (Use all samples in above list.)	4. Conduct classroom discussion. a. Discuss nutritional adequacy of a variety of foods as it is related to size of portions. b. Analyze food intake for a day of groups being served, e.g., patients, personnel. c. Price day's menus by items. d. What food items have what eye appeal or satiety value? Discussion on appeal to cover general tendencies as well as regional, ethnic, and religious groups. e. Discuss each of the cases in the sample, analyzing the combination of factors involved and conflicts they create.
5. How do some of the institutional policies apply to portion control?	5. Budget limitations leading to larger portions of starchy foods.
6. What are some of the guiding principles about portioning?	6. Summation discussion about previous points.

Editorial

LULU GRAVES' BEQUEST TO A. D. A. LOAN FUND

A sum of $500 has been received by the Association from the executor of the estate of Lulu Graves, Co-Founder, First President, and later Honorary President of the American Dietetic Association. This money, according to the terms of Miss Graves' will, is to be applied to the A.D.A. Loan Fund for Graduate study.

This bequest to the A.D.A. Loan Fund exemplifies her interest in the growth and development of the profession, for the Fund was established to encourage young members of the profession to do graduate work in the field of nutrition and dietetics. The Fund was created originally by a gift of $1000. Since that time the interest from the fund for life membership in the Association, gifts from life members themselves and other individuals, and contributions from state and local associations has swelled the total.

Loans up to $1000 may be made from the Fund to any active member of the Association of two years standing who wishes to prepare for a more desirable and responsible position through graduate study. Specific conditions governing loans may be found in the December 1949 issue of the JOURNAL.

Miss Graves' bequest has been accepted by the Association with gratitude for the tangible gift which will serve as a memorial of her undying professional interest.

The A.D.A. Loan Fund has also been augmented recently by a gift from the Illinois Dietetic Association in the name of M. Faith McAuley. The Illinois Association has received contributions for the M. Faith McAuley Memorial Fund amounting to more than $1000 from dietitians who had the privilege of working with and knowing Miss McAuley. This Memorial Fund has been added to the A.D.A. Loan Fund for administration on a national level, but has been earmarked for loans to dietitians wishing to continue study in the field of food administration—Miss McAuley's major field of interest.

That the A.D.A. Loan Fund for Graduate Study serves a real purpose has been evident from the increasing number of requests for loans each year since its establishment in 1946. During the last two years, five loans have been granted. As a constructive tool in furthering the growth of the profession, the Fund's value is unquestioned, and for this reason there has also been much interest in increasing the Fund so that it may be available to more members. Contributions from active, life, and associate members who wish to assist dietitians in further specialized training are welcomed by the Association and their support of this activity will increase the Fund's usefulness.

WASHINGTON WELCOMES YOU TO THE CONVENTION

To grasp fully the majestic beauty of Washington, envisioned by Pierre Charles L'Enfant, its original designer, as "a city of magnificent vistas," you should see it by air and by land.

From above, flying at low altitude, you can appreciate the symmetry of plan, with Capitol Hill as the nucleus of the pattern; see the Mall, 2½ mi. of green velvet, aptly called the fairway of democracy, along the sides of which rise the stately temples of government; view the blue waterways, reflecting the gleaming white memorials to the nation's great; and see at close hand the tallest shaft of masonry on earth, the Washington Monument, reaching 555 ft., into the sky.

On level ground, driving down the wide, tree-shaded streets, with which the city is identified, you may remember that a hundred and fifty years ago this area was marshy and wooded, with a settlement of less than four hundred houses.

At that time, the forerunner of Pennsylvania Avenue, the broad, one-mile sweep between the White House and the Capitol, was a narrow path, damp under foot, with alder bushes and stumps obstructing the steps of the dignified statesmen whom duty required to traverse it.

Perhaps only Alexander Robey Shepherd, who in 1802 plunged into an aggressive building program, picking up the work started by L'Enfant, dreamed that some day the Federal City would become a center of culture and science, with its many museums, art galleries, and libraries, housing countless world treasures.

After you have seen Washington, you will be glad that two Congressmen were laughed down during the dispute over the location of the capital. They suggested that there be two national capitals, one in the North and the other in the South, and that the governmental establishment, replete with a statue of George Washington, be mounted on wheels and shuttle from one capital to the other whenever the occasion demanded.

Current Comment

A PRACTICAL APPROACH TO EMPLOYEE TRAINING[1]

AGNES B. CASSITY

Assistant Chief Dietitian, Veterans Administration Hospital, Houston

Employee training! It is a slogan, a phrase, that nags at you constantly, harried as you are by a thousand details, short of dietetic staff, and increasingly short of temper—but with a long conscience! To go ahead with a training program, however, you may need both a little know-how and much courage.

First, a bit of reassurance. You don't need to be skilled at training to plan and present a successful course of instruction for dietetic employees. You do need, however, to be able to do several things. First you must realize that time given to training won't be wasted if definite periods are allotted and scheduled for the meetings. Conversely, haphazard instruction only tends to confuse the employee, particularly in a concentrated, short course.

PLANNING IN ADVANCE

Determination of your objectives is the all-important second step in planning a training course. Ask yourself these questions: What are the training needs? What employees need training? In which areas is training necessary? What do I want to accomplish? These decisions are not as simple as they sound because of the very human impulse we all have to crowd too much diverse information into every opportunity. Be firm with yourself at this point, because confusion is bound to result from packing a course with unrelated information. An excellent way to plan a training course which is to cover several jobs is to divide the program into units for instruction. To do this, outline the course, breaking it down into definite units. Fill in each unit with headings of subject matter to be presented. For example, in a course for kitchen supervisors, plan a unit of instruction for food handling, a second unit for a certain cleaning procedure, another unit for supervisory methods, and so on. And remember that it is vital to complete each unit before proceeding to the next. This means that all talks and discussions, on a subject will be given during that portion of the course—all related films will be shown and discussed, all demonstrations given, and all pertinent material distributed—before the class moves on to the next unit.

TEACHING AIDS

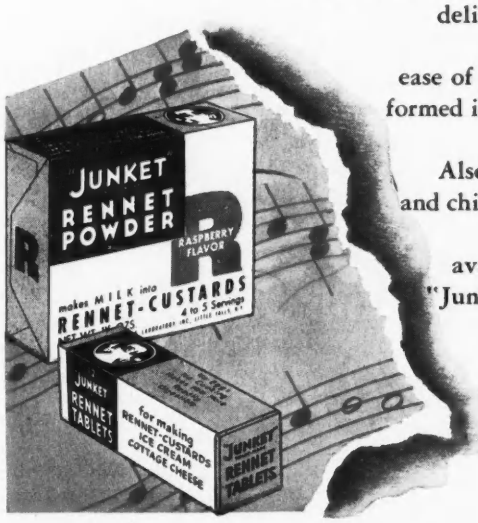
After outlining any course, decide how you will present the information and what material you will hand out or use to illustrate each unit. Then, assemble the materials well in advance of the date for beginning the course. I might mention that illustrative material, if used correctly, can be of much value in pointing up a dull discussion. Too frequently we forget that people remember what they see longer than what they hear. Many kinds of charts and illustrated pamphlets filled with accurate information are available. Sources for free material include advertising and sales departments of commercial firms, state and local public health agencies, and governmental agencies. The American Dietetic Association publication, *A Guide to the Selection and Training of Food Service Employees*, contains not only training outlines but also sources of material. You owe it to your trainees, however, to screen all "hand-out" material. And a word to the wise—don't distribute too much material, or the students will be overwhelmed and discard all of it without a second glance. You may, if you are talented, make your own charts and pamphlets or find among your employees a gifted sign painter or chart maker. Drawing your employees into the planning and preparation encourages their interest. This happened with me, and the result was a set of beautiful charts to use in teaching diabetic patients. One of our kitchen helpers was studying commercial art on his own time. Needless to say, I made full use of his ability.

Films, one of the best teaching aids, are available for loan at no cost or for very nominal cost, from film companies such as Castle Films with offices in New York City, Chicago, and San Francisco; the

[1] Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of her own study and do not necessarily reflect the opinion or policy of the Veterans Administration. Presented at the meeting of the Texas Dietetic Association in Houston, October 28, 1949.

ON THE THEME OF MILK

When the basic dietary theme of milk no longer strikes a responsive chord in children or adults—because of aversion or intolerance—the resourceful "composer" may happily resort to a number of variations . . . by changing the consistency and flavor of milk with either "Junket" Rennet Powder or Tablets, to insure an adequate intake of this essential nutrient. • With quickened appeal to retina and taste-buds, deliciously tempting rennet-custards maintain all the nutritional values of milk—yet surpass it in ease of digestibility because of the smaller, softer curds formed in the stomach by the enzymatic action of rennin. • Let us send full details and trial packages. Also, samples of authoritative, time-saving infants' and children's diets—for physicians "personalized" with our compliments. • "Junket" Rennet Powder available in six popular flavors, already sweetened; "Junket" Rennet Tablets—not sweetened or flavored.



"JUNKET" is the trade-mark of Chr. Hansen's Laboratory, Inc., for its rennet and other food products, and is registered in the United States and Canada.

"JUNKET" BRAND FOODS
DIVISION
Chr. Hansen's Laboratory, Inc.
LITTLE FALLS, N. Y.
L-650

United States Department of Agriculture; Encyclopedia Britannica Films, Chicago; commercial organizations; local and state public health agencies; the United States Army area headquarters; and from public libraries. It is important that a film be previewed before it is shown, because titles may be misleading and disappointment in the film's content may result. If it isn't related to subject matter, don't use it. In addition, you should keep in mind when requesting films that all companies have schedules for distribution. Submit the request far enough in advance to be included in the company's schedule; be definite in specifying the date you intend to show the film, show it at that time, and return it promptly.

DUPLICATING COURSE MATERIAL

When I conducted my first course some time ago I learned that taking good notes is an almost impossible undertaking for employees attending dietetic training courses. Since that time I have issued after each lecture or discussion a mimeographed copy of the material presented. These hand-outs may be exact copies of talks or summaries of discussions. In order to prepare this material in time for use, I ask visiting instructors to send advance copies of their talks. Doing this not only takes care of preparing hand-outs beforehand, but provides an opportunity to review the material and to suggest corrections or changes. If you have no facilities for duplicating material, or if your group of trainees is small, carbon copies of discussions can be distributed. I admit candidly that you will need secretarial help to keep up with this supplementary form of instruction. The work involved, however, is well worth the effort, for the student acquires review as well as future reference material and automatically compiles a record of the course.

METHOD OF INSTRUCTION

Give careful consideration to methods of instruction to insure successful training. Your choice of methods may vary but will, in great part, be influenced by the length and content of the course, the training needs, the number of employees to be trained, and the amount of time that can be devoted to training from the standpoint of the employees' and the teaching staff's time.

Recent emphasis among educational groups on group discussion as a method of instruction leads me to enlarge upon it a bit for you. It is undeniably a valuable technique. In this method of teaching, the group actively participates in class discussion, with the instructor playing the role of guide. However, if you plan to use this method, you should be forewarned that skill in group leadership is a "must" in order to prevent waste of time and the degeneration of a discussion into aimless "chitchat"; or even worse, the "sounding off" of one individual to the exclusion of other members of the group. As group leader, you must be fully prepared to guide the group to an acceptable conclusion without influencing it with your own views. This warning is not intended to discourage you so that you feel you can never try this method of teaching. Do try it! You'll be surprised at the enthusiastic response from your employees when they realize they can air their views and share their experiences with you and with each other.

If there is so little time to devote to a training course that only bare facts can be presented, then present these facts informally and highlight them with your own and the group's experiences.

Demonstrations can be of great help in conducting a short, comprehensive course. To utilize demonstrations best so that they involve minimum work on your part, use skilled workers in the department. Employees generally enjoy demonstrating their skills and if you offer a worker an opportunity to show himself as an authority—no matter what the task, you usually find yourself with a proud expert. In fairness to him, as well as to the group, be sure he understands exactly what you expect of him. I suggest a rehearsal of the demonstration so that you can review it and suggest corrections, and also give the demonstrator confidence in himself before he meets the group.

Regardless of the method selected for that training which is off the job, remember that training on the job must also be a part of the course. See to it that principles learned are put into practice.

THE INSTRUCTORS

You can make or break a training course by your choice of instructors. You can also wear yourself to a frazzle by trying to do it all yourself. There are means, however, to insure excellent instruction without breaking down from overwork. Of course, the simplest way is to appoint somebody else—another dietitian or a training person— to do it for you. Unfortunately, however, this is usually impossible to do and you alone carry the ball. Then, how can you avoid doing it all yourself?

One practical way is to survey the dietitians on your staff and select those who are good teachers or discussion leaders to instruct for the units related to their jobs. Or, use the supervisory personnel in the kitchen. Visiting teachers may also be used. Excellent sources for guest instructors are representatives of commercial organizations, local public health agencies, the United States Department of Agriculture, and staff members from other departments in your organization. To illustrate the variety of sources from which visiting instructors may be drawn, I quote from the roster of a bakers' refresher course I conducted: a bakers' counselor from a reputable commercial firm; a bakers' consultant from the bakery research department of a meat packing house; a

Easy, low-cost way to add IRON and THIAMINE to the diets you plan

The patient most in need of extra iron, extra thiamine, frequently proves a problem. For so often lowered digestive capacity eliminates from the diet many food sources of these nutritional essentials.

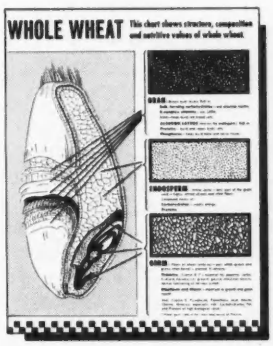
That's why readily digestible Hot Ralston Cereal may have a place in the diets you plan. It furnishes generous amounts of iron and thiamine, at a cost of about 1¢ per serving.

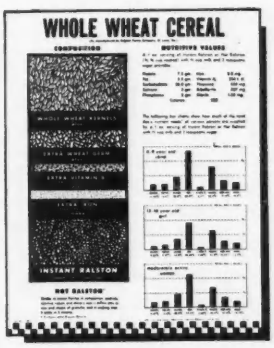
A single 1-ounce serving of Hot Ralston supplies the following percentages of the minimum daily requirement—

	1–6 years	6–12 years	adults
IRON	113%	84.9%	84.9%
THIAMINE	84%	56%	42%

Plus 3.5 Gm. PROTEIN

NEW TEACHING AID WITH REAL WHEAT!





Novel, instructive chart contains, on one side, *actual samples* of the parts of the wheat kernel — on the other side, a cereal and its ingredients. Gives basic nutritional information about wheat. Demonstrates, visually, the contributions of whole wheat to the diet. Stimulates the interest of both professional and lay classes.

MAIL COUPON FOR FREE CHART

Cooks in 5 minutes

Cooks in 10 seconds

RALSTON PURINA COMPANY, Nutritional Service
LD-9 Checkerboard Square, St. Louis 2, Missouri
Please send:

——— C1288—Whole Wheat Grain and Cereal Ingredient Chart. One FREE. (Additional charts 50¢ each.)

Name _____

Organization _____

Street Address _____

City _____ *Zone* _____ *State* _____

flour expert from a large flour company; a shortening expert from a national shortening company; a cake decorator from a local bakery; three staff members from the hospital dietetic department; a representative of a nationally known equipment company; a pathologist; and a personnel officer from the hospital. Use of a varied number of instructors has several definite advantages: (a) it relieves you of long hours of preparation and teaching; (b) it provides variety for students and relieves the tedium of learning; and (c) it provides the group with much more accurate information than you could give since these people are experts in their particular fields.

OTHER CONSIDERATIONS

Briefly, I shall emphasize a few other points to remember in undertaking a training course.

(a) Select a well ventilated, quiet room for the classes. Blackboards, easels for charts, bulletin boards, and an adequate number of chairs and tables or desks should be provided. The adaptability of the room for showing films should also be considered.

(b) Teach at the intellectual level of those you are instructing. All the beautiful speeches you write are worthless if the listeners cannot cope with the vocabulary or if the context is so detailed as to overwhelm them. The best way to lose your students is to talk over their heads; equally bad is the too-frequent error of talking down to people. Simple, direct language and clearly presented facts succeed best with plain people.

(c) Keep instruction periods short. I never hold a group more than 20 min. if at all possible. After that length of time, if they are not actively participating, they are usually asleep, and I don't blame them!

(d) Remember that rewards are important. Present a certificate at the completion of the course. Any student will treasure his diploma.

MOTIVATING TRAINEES

The keynote to successful instruction is this: if you encourage workers to feel that they are essential members of your food production team at the beginning of a training program, you will do much to establish the receptive attitude necessary for learning. And if, during the training period, you continue to stress that they are craftsmen—no matter how menial their task—you will end your training with a group of craftsmen, artists of the kitchen—every man a king. Through continuous follow-up you will know that the skills they've acquired are being put into practice. Then, results will be truly apparent in smoother kitchen operation, and your teaching will obviously have been successful.

Dynamic Property of Milk

Milk is a commodity of no fixed composition. Rather, its constancy is characterized by the variability of its composition. It is a very complete fluid secreted, not excreted, by a highly organized and active gland under biologic, physiologic, and hormonal stimuli and stress. This fluid possesses, therefore, a wide variety of both static and dynamic chemical properties.

The gross chemical composition of milk (static property) is of great significance both economically and nutritionally. But, the composition of milk may bear little or no relationship to the behavior pattern of milk, that is to its dynamic properties.

Current interest in the gross composition of milk pertains to methods of evaluating the economic and nutritional values of milks of various fat contents. Considerable confusion exists as to the relationship of the fat and non-fat solids. This confusion stems, in part at least, from the failure to fully distinguish normal from abnormal milks, and natural from standardized milks. There is reason to believe that the food and usage values of natural milks may be calculated from the fat percentages with an accuracy sufficient to be used as a basis of payment to the producer and by the consumer.

The most challenging and interesting phases of the chemistry of milk are concerned with its dynamic properties. These largely determine its behavior. Unquestionably, the most significant behavior trait of milk resides in the rate of its coagulation with rennin. The firmness of the clot appears to be governed largely by static properties. A low concentration of rennin creates a condition of instability in the colloidal system of milk by lowering the electrokinetic potential of the calcium caseinate entities. How this is brought about and why the change is permanent remains a mystery.

Even if the knowledge of rennin action is far from complete, the coagulability of milk by rennin serves as the criterion of normalcy in studies involving synthetic milks, the relation of dietary levels of calcium and phosphorus to milk secretion, hormone-induced lactation, the effect of environmental temperature on milk secretion, the effect of mammary infection, and others. It appears that most physiologic disturbances of the cow are reflected in the coagulability of her milk by rennin.—*Abstracted from the Borden Award paper presented by Professor George A. Richardson, Oregon State College, before the American Chemical Society in Philadelphia on April 10.*

When you think of

think of WYANDOTTE

You are in a position to know how important proper cleaning can be. But perhaps you are not familiar with all the specialized cleaning products designed for just such jobs and conditions as those you encounter.

That's where your Wyandotte Representative—and the *complete* Wyandotte line—enter the picture.

Take dishwashing, for example. Is hard water a problem? Have you experienced difficulty with scale formation, or streaks or film on dishes? Do you find it costly to meet local sanitation requirements? Your Wyandotte Representative will be glad to help you analyze the problem — and to recommend the product you need to correct it — most efficiently and economically.

Perhaps you're more concerned with your institution's laundry. Remember that different conditions require different types of laundry compounds. In the Wyandotte line you'll find the detergent, builder, sour or other product you're looking for — one which is made to fit *your* needs.

Are maintenance cleaning costs getting out of line? Is there the danger of slipping accidents because of faulty cleaning materials? It may pay you big dividends to look into the line of Wyandotte cleaners for floor cleaning, washing painted surfaces, porcelain. . . .

Wyandotte makes more specialized cleaners than anyone else in the world. Among these are dishwashing and laundry compounds, maintenance cleaners, germicides, detergent-sanitizers. For information in any one or all of these fields, just call or write your nearest Wyandotte Representative. His business is to help you; his skill and experience are yours for the asking. Please feel free to call on him, without obligation.

Wyandotte Chemicals Corporation

Wyandotte, Michigan • Service Representatives in 88 Cities

Wyandotte

REG. U. S. PAT. OFF.

Book Reviews

Manual of Accrediting Educational Programs in Nursing. By the Committee of the Six National Nursing Organizations on Unification of Accrediting Activities. New York: National Nursing Accrediting Service, 1949. Pp. 114. Leather. Price $4.

The thought behind the preparation of this *Manual* is expressed in the Preface as follows: "This Manual of Accrediting in Nursing is prepared for all who are interested in the study and improvement of educational programs in nursing through the process of accreditation. In general it provides a common core of accepted policies, principles and descriptive criteria which may be applied to any category of nursing education by the responsible board of review and the appropriate accrediting representatives in evaluating a specific educational program in nursing." The *Manual* was prepared by the Committee of the Six National Nursing Organizations on Unification of Accrediting Activities. The organizations involved are the American Association of Industrial Nurses, Association of Collegiate Schools of Nursing, American Nurses Association, National Association of Colored Graduate Nurses, National League of Nursing Education, and National Organization of Public Health Nurses.

The *Manual* is divided into three parts. Part I on "statement of policy for accreditation" gives in detail eligibility for purposes and bases for accreditation. Part II is a statement of criteria for institutional excellence and includes: approval by other groups, philosophy and purposes of educational units, guiding principles and policies, financial support, faculty competence, student personnel service, curriculum organization and content, clinical resources, administrative concern, library facilities, physical facilities, and records and reports. Part III is a statement of procedure and includes the steps in the accrediting procedure and the duties and responsibilities of the personnel concerned in carrying on the accrediting procedure.

The form in which the material is presented is excellent. Each section is headed by a "statement of guiding principles and policies" that is followed by an outline of the details involved. It would seem to be a valuable reference for making plans for new schools of nursing as well as assisting the existing schools in meeting standards and strengthening the program of study. The practical value of the extensive subject matter might be enhanced if the statements of policy could be more simply stated. Perhaps this suggestion is unnecessary for those who will use the *Manual*.

Since general policies only are outlined in regard to curriculum, there is no mention of the learning experiences of the student nurse in the field of dietetics. According to the *Manual*, the curriculum is to be evaluated in terms of the objectives and provisions for carrying them out.

The value of this type of material is unquestionable, and the nursing profession is to be commended on its efforts to unify accreditation of educational programs of nursing on a national basis.—*Wilma F. Robinson, Consultant Dietitian, Illinois Department of Public Health, Springfield, and Mable MacLachlan, Educational Director, American Dietetic Association, Chicago.*

Bananas. By Harry W. vonLoesecke. New York: Interscience Publishers, Inc., 1949. Cloth. Pp. 189. Price $4.50.

This book is one of a new series of monographs on the chemistry, physiology, and technology of food and food products. The series is being planned to be of value to two groups of readers: those interested in the production of crops and those interested in the utilization of crops, which includes food processors and ultimately nutritionists.

The yellow banana is taken for granted by most United States consumers. Its origin is uncertain but it may have been one of the first foods of man and one of the first plants cultivated. Native to Central America, bananas have become an integral part of our food habits. This book describes the rise of the banana industry as a struggle against tropical diseases and steaming jungle and the conquering of mountain transportation.

Detailed descriptions are given of the planting and cultivation of banana trees, the effect of mineral constituents of the soil on those of the fruit pulp, and the structure of the plant. The story is told of harvesting, transportation, storage and ripening methods, the effects of chilling, and the chemical changes during ripening. A color chart shows color changes as the banana ripens.

The chapter "Nutritive Value in Health and Disease" with a table showing vitamin content is of special value to the dietitian.

Bananas is splendid material for students of food technology and marketing and is good background reading for everyone interested in food.—*Mary I. Barber, Food Consultant, Battle Creek, Michigan.*

The Art of Cheese Cookery. By Nika Standen. New York: Doubleday and Company, Inc., 1949. Pp. 192. Cloth. Price $1.95.

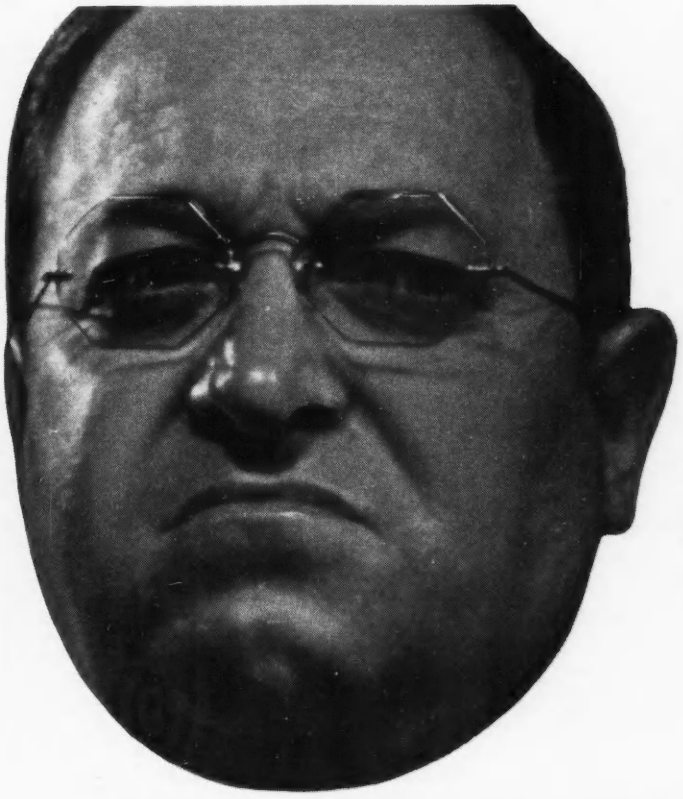
Do you like little bits of cheese strong enough to stand alone? Do you like "stinky" cheese? Do you want to read until you have to scrounge for a snack? If so, you'll thoroughly enjoy *The Art of Cheese Cookery*!

The book opens with an academic discussion of cheese, its nutritional advantages and digestibility; its history and origins; its preparation and story; and its many kinds and varieties. This alone would make it a valuable volume for a teacher of foods and her students.

But, in addition, exciting, mouth-watering recipes follow. There are chapters on appetizers and canapes; soups; hot breads, biscuits, and muffins; fondues, soufflés, puddings, and rabbits; fish; meat and poultry; fritters, patties, and puffs; sauces; salads; puddings, cakes, and pastries; sandwich spreads; brandied cheeses; and "How to Make Cheese."

The true Swiss fondue recipe alone is worth the price of this delightful and informative book. Can't you just imagine a group of chums gathering around a chafing dish dipping crusty, bite-size pieces of French bread into a bubbling fondue mixture of Swiss cheese, garlic, Neuchatel wine, and brandy? Crisp apples and hot coffee would make this a meal sublime:

You'll enjoy *The Art of Cheese Cookery.*—*Virginia Monohan Bayles, University of Denver.*



The Case of FUSSY FREDDY*

*AND A CLEVER DIETITIAN'S SOLUTION!

Fussy Freddy was as fussy as a patient could be. He fussed about not smoking, about visiting hours, and about being awakened before 9:00 a.m. But his clever dietitian made sure he would never find fault with his food. For example, when it came to cereal, she served him Post's *Individual* Cereals. Freddy was able to choose a different cereal seven days a week (and two on Sundays).

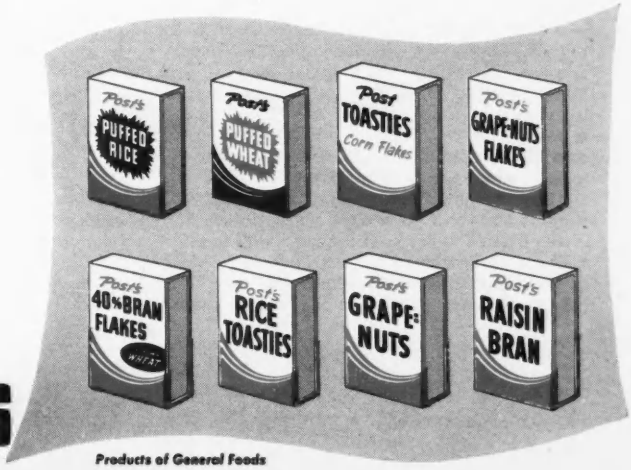
No Waste—Sanitary, Too!

Then, too, Post's 1-oz. individual-serving packages eliminated waste. Because, on those mornings when Freddy was too sick to eat his breakfast, she merely returned the unopened Post's package to the hospital storeroom. Sealed protective wrappings kept the cereal fresh, prevented any chance of contamination.

And the dietitian never had to take the risk of leaving *open* cereal in her kitchen.

P.S. Post's also gave Freddy's dietitian a bonus! For Post's Cereals are packed with valuable prize coupons she was able to redeem for her choice of more than 1,400 prizes for her hospital or personal use. Won't you send today for a free Catalog listing these prizes? Write: General Foods Institution Prize Dept., Box 121, Dayton, Ohio.

POST'S *Individual* **CEREALS**



Products of General Foods

Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Hermia M. Handt and Marie L. Helldorfer, Veterans Administration Hospital, Hines Illinois; Berdena Rosenow, University of Kansas Medical Center, Kansas City, Kansas; Mildred Bonnell and administrative interns, University of Washington, Seattle; Quindara Oliver Dodge, Women's Educational and Industrial Union, Boston; and the Journal Staff.

THE AMERICAN JOURNAL OF SURGERY

Vol. 79, February, 1950

* Primary treatment of extensive burns. R. K. Brown and J. M. Dziob.—p. 288.

Treatment of Extensive Burns. One of the problems discussed in this article is replacement of glucose, salt, and water at rates commensurate with losses. Glucose may be given intravenously and is dispersed in the general circulation. Sugars by mouth are preferred because they enter portal circulation and protect the liver. One-half tsp. salt to a glass of water is better than intravenous saline but may not be retained.

ARCHIVES OF PEDIATRICS

Vol. 67, February, 1950

* Poliomyelitis: infectious or metabolic? W. J. McCormich.—p. 56.

Is Poliomyelitis Infectious or Metabolic? The marked resemblance in the epidemiology, symptomatology, and pathology of poliomyelitis and beriberi is presented in support of the hypothesis that thiamine deficiency is the basic etiologic factor in poliomyelitis. It is suggested that the paralytic phenomena in poliomyelitis may be indirectly referable to acute thiamine avitaminosis precipitated by converging factors which increase the metabolic rate and accordingly the bodily requirement for this vitamin. Such factors include febrile conditions, age, sex, climatic conditions, physical overexertion in work or play, and pregnancy. The paralysis may be a secondary metabolic manifestation rather than a primary infectious disease.

GASTROENTEROLOGY

Vol. 14, March, 1950

* Psychotherapy in chronic peptic ulcer. S. Selesnick.—p. 364.
* Is susceptibility to peptic ulcer inherited? The occurrence of ulcer in identical twins. A. C. Ivy and F. T. Flood.—p. 375.

Psychotherapy in Chronic Peptic Ulcer. Sixty adult male patients with chronic, uncomplicated peptic ulcer were studied. Thirty received regular medical treatment, and thirty received psychotherapeutic treatment only. The latter group responded as well as the control group, demonstrating that psychotherapy has a place in medical treatment of chronic peptic ulcer, although some patients will not or cannot accept it with benefit.

Heredity and Peptic Ulcer. There is little evidence to support the contention that susceptibility to peptic ulcer is inherited. Evidence on occurrence in families and monozygous twins supports but does not establish the view that an organ susceptibility to ulcer is inherited. More information on incidence of ulcer in one or both twins is needed.

THE INDIAN JOURNAL OF MEDICAL RESEARCH

Vol. 37, July, 1949

Mutual influence of nicotinic acid and riboflavin in metabolism. H. N. De and S. N. Banerjee.—p. 293.

* Copper and manganese metabolism with typical Indian dietaries and assessment of their requirement for Indian adult. H. N. De.—p. 301.

Determination of vitamin A with the Lumetron photo-electric colorimeter. N. K. Iyengar and H. K. Biswas.—p. 311.

* Studies in protein metabolism. The influence of dietary protein on the urinary nitrogen excretion. V. N. Patwardhan, R. Mukundan, B. V. Rama Sastri, and P. G. Tulpule.—p. 327.

Nutritional megaloblastic anaemia: so-called pernicious anaemia of pregnancy—a preliminary report. B. V. Kothari and Y. M. Bhende.—p. 347.

Copper and Manganese Requirements. Metabolic studies of copper and manganese on seven normal male adults given rice and wheat diets showed that these typical diets of India contain sufficient amounts of copper and manganese to keep the normal individuals in positive balance with these elements. The minimum requirements of copper and manganese have been calculated to be 2.02 mg. and 2.74 mg. per day respectively. The type of fat used in the diets did not affect the metabolism and requirements for copper and manganese.

Protein Metabolism. Four adult male volunteers were kept first on predominantly vegetarian diets and later on diets in which animal protein (from meat, milk, or eggs) supplied at least 50 per cent of the protein. The total protein content was kept nearly constant. When the subjects reached the steady state of urinary nitrogen excretion on each diet, the following observations were recorded: (a) The amount of nitrogen excreted in urine per 24 hr. was distinctly higher on diets containing a high proportion of animal protein. The fecal nitrogen remained unaltered or showed insignificant variation. (b) The nitrogen retention was higher in vegetable-protein periods that in animal-protein periods. The changes in nitrogen retention could be repeatedly demonstrated by alternating vegetable- and animal-protein diet periods. The apparent digestibility of proteins during the two periods was practically of the same order. The conclusion is made that the low urine nitrogen observed in Indians cannot be ascribed to a low-protein intake.

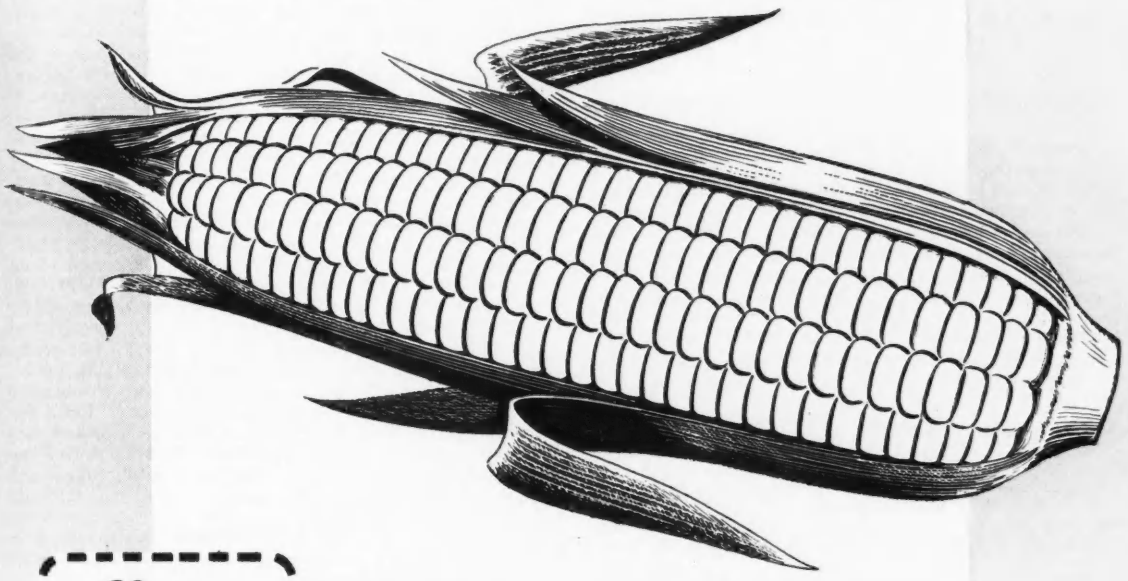
JOURNAL OF CLINICAL INVESTIGATION

Vol. 29, February, 1950

* Effect of protein starvation and of protein feeding on the clinical course, liver function, and liver histochemistry of three patients with active fatty alcoholic cirrhosis. R. D. Eckhardt, N. Zamcheck, R. L. Sidman, G. J. Gehuzda, and C. S. Davidson.—p. 227.

For your food file, Doctor—

valuable data on canned corn!



Corn

Nutritive value in average* serving of canned corn

Nutrient	Quantity	Percentage of Daily Recommended Allowance**	Rating As Source of Nutrient
Food Energy (1)	87 calories		
Niacin (2,3)	1.0 mg.	7	Fair
Ascorbic Acid (c) (4,5)	5.3 mg.	7	Fair

*4 oz. (113 grams) **Percentage based on Recommended Daily Allowance of physically active man—National Research Council.

1. Food Research *11*, 391 (1946)
2. J. Am. Dietet. Assoc. *21*, 357 (1945)
3. J. Nutrition *28*, 117 (1944)
4. J. Am. Dietet. Assoc. *23*, 226 (1947)
5. J. Nutrition *28*, 107 (1944)

This information is presented so that your secretary may clip it for your abstract file. If you would like free reprints of advertisements providing similar information on tomatoes and salmon, write to:

American Can Co., Sales Promotion Division
100 Park Avenue, New York 17, N. Y.

American Can Company

New York • Chicago • San Francisco • Hamilton, Canada

Protein Starvation in Alcoholic Cirrhosis. Three deeply jaundiced patients with active fatty alcoholic cirrhosis were selected for a study of the effect of protein starvation and of subsequent refeeding upon their clinical course, liver function, and liver histochemistry. In this study improvement occurred in liver function in spite of negative nitrogen balance occasioned by diets grossly deficient in or devoid of protein. Liver histology did not improve except when choline was given, and morphologic improvement appeared only with adequate provision of exogenous protein and maintenance of positive nitrogen balance.

THE JOURNAL OF LABORATORY AND CLINICAL MEDICINE

Vol. 35, March, 1950

* Defective fat absorption following vagotomy. H. J. Fox and K. S. Grimson.—p. 362.

Defective Fat Absorption Following Vagotomy. A study of fat absorption was carried out on patients having had vagotomy and experiencing symptoms indicating dysfunction of the small intestine. It was found that the normal control patients absorbed more than 90 per cent of the fat ingested, while in the group which had undergone vagotomy, all except one absorbed less that 90 per cent of the ingested fat. The vagotomy patients showed an average fecal output greater than that of the control group. It is thought that the defective fat absorption occurring in certain patients following vagotomy was primarily due to interruption of the parasympathetic nerve supply.

THE JOURNAL OF NUTRITION

Vol. 40, January, 1950

* Biological values of six partially purified proteins for the adult albino rat. H. H. Mitchell and J. R. Beadles.—p. 25.
* Resurvey of nutritional status in Norris Point, Newfoundland. G. A. Goldsmith, W. J. Darby, R. C. Steinkamp, A. S. Beam, and E. McDevitt.—p. 41.
* The influence of tryptophan upon urinary nitrogen and amino acid excretion in the rat. A. A. Wykes, L. M. Henderson, and C. A. Elvehjem.—p. 71.
* A comparison of parenterally and orally supplied protein hydrolysate for utilization of the nitrogen in long continued feeding experiments. C. Alper, B. F. Chow, and S. DiBiase.—p. 81.
* Interrelationship of folacin, vitamin B_{12}, and choline. Effect of hemorhagic kidney syndrome in the rat and on growth of the chick. A. E. Schaefer, W. D. Salmon, D. R. Strength, and D. H. Copeland.—p. 95.

Vol. 40, February, 1950

* Dental caries in the cotton rat. XI. The effect of feeding a natural diet comparable to a human diet. M. Zepplin, J. K. Smith, H. T. Parsons, P. H. Phillips, and C. A. Elvehjem.—p. 203.
* The relation of the amino acid-sugar reaction to the nutritive value of protein hydrolysates. L. Friedman and O. L. Kline.—p. 295.

Value of Proteins for Adult Rats. The digestibilities and biologic values of six protein sources of widely different nutritional quality were determined with adult male albino rats by the nitrogen balance method. Protein sources studied were whole egg, egg albumin, beef, casein, wheat gluten, and peanut flour. Comparison of the results with those obtained by other investigators with adult human subjects using the same protein sources and the nitrogen balance method, showed that the digestibility did not differ greatly for growing rats, adult rats, and adult humans. However, the biologic values were quite different for those proteins deficient in cystine, methionine (beef, casein, and peanut flour), or lysine (gluten). On the basis of the experiment it may be concluded that the cystine-methionine requirement of the adult rat was more intense in relation to the requirement for other amino acids than that of the growing rat or of the adult human. The lysine requirement was much less for the adult rat. Except for differences in the proportional requirements for cystine-methionine and lysine, the dietary nitrogen requirement for nitrogen equilibrium was of the same order of magnitude for adult rats and adult humans when expressed as milligrams of nitrogen per calorie of basal metabolism.

Survey of Norris Point, Newfoundland. A resurvey of a selected sample of the population of Norris Point, Newfoundland, in 1948 showed considerable improvement had occurred in the general nutritive state since 1944. The group studied included 126 persons distributed as follows: (a) thirty-six women who had been pregnant within the previous two years; (b) thirty-two children ages three to six years; (c) twenty-one children ages ten to fourteen years; (d) eleven men; (e) sixteen other women; and (f) ten children ages seven to nine years. A striking decrease in the incidence of several signs and symptoms related to B-complex deficiency was observed. This improvement appeared to be related in large part to the use of enriched flour beginning in 1944. No improvement was noted in ascorbic acid nutrition, and few changes occurred relative to vitamin A.

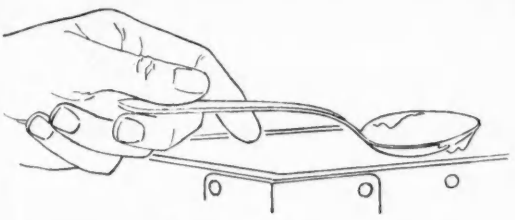
Tryptophan and Nitrogen Excretion. Protein-depleted, adult rats were fed low-protein diets containing tryptophan-free, acid-hydrolyzed casein supplemented with the other essential amino acids to render the diet adequate for maintenance. The feeding of supplementary levels of tryptophan caused a marked decrease in urinary nitrogen excretion. Amounts of tryptophan ranging from 100 to 300 mg. (8 to 4 mg. per rat per day) did not appreciably alter the level of excretion of urinary nitrogen. The requirement for tryptophan of adult rats fed a low-protein diet supplying a minimum of the essential amino acids for maintenance and some of the non-essential amino acids varied from 4.0 to 6.4 mg. per 200-gm. rat per day, depending upon the length of time that elapsed after feeding the protein-depletion diet. When the daily food consumption was approximately 8.0 gm. per day, positive nitrogen balance was possible in adult rats which received a diet containing only 2.9 per cent protein. Excessive amounts of tryptophan in the diet caused little change in the urinary excretion of tryptophan, threonine, leucine, histidine, methionine, arginine, and proline.

Long-Term Parenteral Nitrogen Feeding. Dogs were depleted of protein reserves by the feeding of protein-free diets with and without the accompaniment of plasmapheresis. Repletion was carried out by parenteral infusion of casein hydrolysate for an extended period, followed by a like period of oral feeding of casein hydrolysate. During repletion the dogs showed no striking increments in body weight. Even though partial repletion was effected by intravenous infusion of casein hydrolysate, the dogs retained more nitrogen via the oral route than via the parenteral route. More of the nitrogen retained via parenteral feeding was utilized for plasma protein regeneration, although more total nitrogen was retained with oral administration. A difference in the utilization of administered nitrogen was noted based upon the extent of depletion of the "protein reserves" of the experimental animal and the way of giving the hydrolysate.

Folacin, Vitamin B_{12}, and Choline. The incidence and severity of renal injury in weanling rats fed diets low in choline and methione were decreased by supplementing the diet with folacin. When both folacin and vitamin B_{12} were added to the basal diet supplemented with 0.04 per cent choline chloride or 0.128 per cent *dl*-methionine, there was complete protection against kidney damage. Evidence is offered that the nutritional requirements of the chick and rat for folacin, vitamin B_{12}, and choline are interrelated, and a specific requirement for one of these nutrients cannot be established unless the level of the other two is taken into consideration.

Dental Caries in the Cotton Rat. A natural diet containing foods found frequently in the human diet and only 17 per cent sucrose, the proportion of sugar consumed by the

ARE YOU SERVING YOUR REPUTATION on a GREASY SPOON?



Here it goes. Into the dishwashing machine—loaded with enough garbage to *guarantee* washing that will *not* be satisfactory in any dishwashing machine.

Travels in nice company. Everything's the best. Yes sir, this spoon bears a mighty precious reputation—along with assorted bacteria, grease and odors.

Still traveling. It's a long, long trail. The harsh word of a dissatisfied customer travels far and wide.

...not when you Pre-rinse and use Calgonite!

1. Pre-rinse!

Pre-rinsing keeps soil load from becoming excessive, garbage and grease are reduced to a minimum. The washing compound *must* be able to take care of the soil load. Pre-rinsing insures this condition, results in sanitary wares, saves money and gives you better results even when dishes and glassware are washed together. Note—Write for line drawing of *Pre-Rinse sink.*

2. Calgonite!

Calgonite is the best dishwashing compound. Calgonite's powerful cleansing action removes and prevents washing film—softens the hardest water—provides vigorous alkaline cleansing action in soft or hard water—prevents scum, film and scale on your dishes—in your dishwashing machine too!

Test Calgonite in your dishwasher—compare Calgonite with any other compound on cost per clean dish. Write for new bulletin "*Better Ways to Clean Wares.*"

Calgonite®

CALGON, INC., HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA.

average person in the U. S., produced as many and as severe carious lesions in the cotton rat as did a basal cariogenic diet with 67 per cent sucrose. Increasing the sucrose levels in the diet to 32 per cent or 47 per cent at the expense of the cereal and bread portion did not appreciably affect the incidence or extent of caries. Reducing the sucrose level to 0 per cent or 2 per cent reduced the occurrence of caries by 80 per cent and 60 per cent respectively. When dry whole milk was omitted and liquid whole milk was given separately as the animals' only source of fluid, the same caries scores were obtained as when the natural diet was fed *ad libitum* without liquid milk. Substitution of white bread for dextrin in a moderately cariogenic diet did not appreciably affect the cariogenicity of this ration when it was fed to cotton rats.

The Amino Acid-Sugar Reaction. In the presence of glucose the nutritive quality of protein hydrolysate solutions deteriorated. Extensive decreases in biologic value upon drying such solutions were accompanied by "browning" of the preparations. The intensity of the color is to some degree related to the extent of deterioration of the nutritive quality. The reduced biologic value resulted from the reaction of amino acids with glucose. Feeding experiments with pure amino acid supplements indicated that histidine, threonine, tryptophan, phenylalanine, lysine, and methionine became unavailable to the animal. Leucine, isoleucine, and valine were not appreciably affected. When measured by microbiologic assay, the losses were relatively small. There would seem to be an important difference in the nutritional availability to animals and to microorganisms of the amino acid-glucose reaction products.

THE LANCET

Vol. 1, March 25, 1950

* Diet in hypertension. Editorial—p. 549.

Diet in Hypertension. The one definite indication for dietary restriction in hypertension is obesity. There is overwhelming evidence that the prognosis in the obese hypertensive patient is worse than in the hypertensive patient of normal or subnormal weight. Every obese hypertensive patient should therefore be given a moderate reducing diet. If he is a heavy salt eater, then salt should be restricted. If hypertensive heart failure occurs, the diet should be modified as for all cases of congestive heart failure, i.e. low-sodium. Particular care should be given in cases of hypertensive patients liable to indigestion, for they are more prone to coronary disease, and there is some evidence that disturbed gastric function may impair coronary circulation. This will usually mean putting the patient on a bland diet. The Allan and Kempner regimens may cause a significant fall in blood pressure in some individuals, but to most workers the evidence does not seem firm enough to justify a doctor putting hypertensive patients on a dull monotonous diet which is difficult to acquire and prepare.

MEDICAL CLINICS OF NORTH AMERICA

Vol. 34, March, 1950

* Comparative absorption of various types of vitamin A preparations. J. M. Lewis and S. Q. Cohlan.—p. 413.

Treatment of diabetes mellitus by the clinical approach. E. Tolstoi.—p. 485.

* Recent developments in the management of congestive heart failure. W. D. Stroud and M. W. Stroud.—p. 563.

Absorption of Vitamin A Preparations. It has been noted that aqueous preparations of vitamin A are much more quickly absorbed than oily preparations. Upon the examination of fecal excretion, it was noted that vitamin A in oily preparations was poorly absorbed and the aqueous preparations were well absorbed. Since in cases of cystic fibroses of the pancreas vitamin A is very important, aqueous preparations are proving useful. Hypervitaminosis A is not to be feared under ordinary circumstances. Since aqueous preparations of vitamin A are more potent, unit for unit, than oily preparations, this must be taken into consideration when administered.

Management of Congestive Heart Failure. It has been suggested that in the management of congestive heart failure patients be put on a low-sodium diet containing about 0.5 to 1.5 gm. sodium per day. Low-sodium diets are usually hard to follow because of the use of commercially canned foods and liquids, and the lack of palatability. Fluid intake should be adequate, about 2000 cc. The B-complex and ascorbic acid should be given in adequate amounts. Protein, 1 to 2 gm. per kilogram of body weight, is advised. A caloric intake sufficient to maintain ideal body weight is advised.

THE MILBANK MEMORIAL FUND QUARTERLY

Vol. 28, January, 1950

* The influence of nutrition on the course of pregnancy. G. Toverud.—p. 7.

Nutrition in Pregnancy. "The child is nutritionally nine months old at birth." By providing an adequate diet with all known necessary supplements for pregnant women at the Sagene Health Station in Oslo, Norway, the health of the pregnant and lactating women and of the infants and children was improved. Anemia and albuminuria of pregnancy were less common, and lactating power was increased. The stillbirth, neonatal, and the total infant mortality rates were reduced about 50 per cent as compared with statistics for Oslo for a six-year period. The prematurity rate was lower, no birth hemorrhages occurred, and rickets was eliminated.

THE NEW YORK STATE JOURNAL OF MEDICINE

Vol. 50, March, 1950

* The treatment of heart failure: digitalis, and mercurial intoxication, penicillin, dicumarol, major surgery. A. M. Master, H. L. Jaffe, and W. D. Dorrance.—p. 553.

Vol. 50, March 15, 1950

Oral chlorophyll fractions for body and breath deodorization. F. H. Westcall.—p. 698.

Treatment of Heart Failure. One therapeutic measure employed in the treatment of congestive heart failure is a salt-free diet. This diet should be arranged so that it is palatable as well as effacious. A "rice diet" may be advantageous for a short time during acute failure. The liquid intake should be ample, 2000 to 3000 cc. daily during a salt-free diet. Frequent or daily injections of mercurials are often effective. Salt depletion and dehydration may result in uremia and even death. The symptoms of salt depletion are weakness, apathy, confusion, drowsiness, or restlessness. Nausea and vomiting may be caused by drugs and by large quantities of fruit juices and unboiled milk.

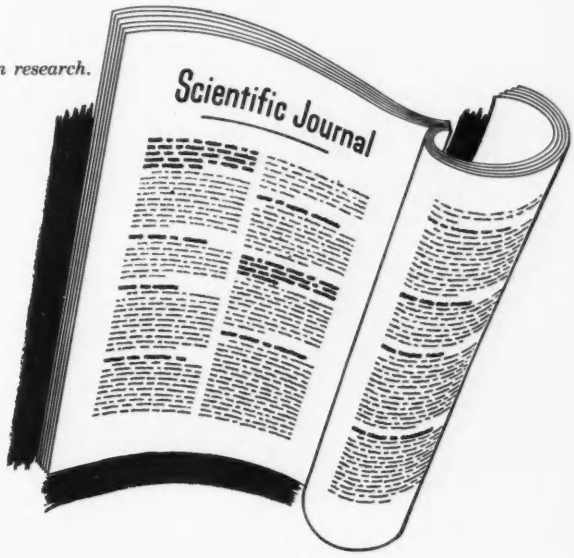
PUBLIC HEALTH NURSING

Vol. 42, March, 1950

* Home care of the diabetic. E. F. Linstrom.—p. 131.
* Nutrition in rheumatic fever. H. G. Olsen.—p. 146.

Home Care of the Diabetic Patient. This discussion covers the simple things that make the important differences to the health and comfort of the person with diabetes. In regard to food, common errors have been noted and emphasis is placed on correcting these beliefs. They include: (a) Liquid foods do have food value, (including instant coffee and cocoa mixtures). (b) Commercial diabetic foods have food value. (c) Protein and fat cannot be taken freely, merely because they do not contain carbohydrates or carbohydrates in large quantities. (d) No food should be substituted for milk, since no other food can supply sufficient calcium. (e) Diet should not be increased or changed radically by the patient.

This is number two of a series of three announcements of nutrition research.



Keeping up with Nutrition Research

New study just released on the effect of cholesterol-containing foods

FOR YEARS, it has been known that too much cholesterol in the blood stream is correlated with certain types of cardiovascular disease.

A new study of this problem has now been published.* Experiments were conducted with hundreds of human subjects, to determine what effect the consumption of cholesterol-containing foods had on the cholesterol-level in the individual's blood stream.

The results of these tests may well mark the beginning of a better understanding of cholesterol-containing foods such as milk and milk products.

**Keys, A. "The relation in man between the levels of cholesterol in the diet and in the blood."* Science, 1950 (In press)

National DAIRY COUNCIL

111 North Canal Street • Chicago 6, Illinois

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

The presence of this seal indicates that all nutrition statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

Since 1915 . . . the National Dairy Council, a non-profit organization, has been devoted to nutrition research and education to extend the use of dairy products.

Nutrition in Rheumatic Fever. Good nutrition is a vital part in the care of the child with rheumatic fever. A balanced, adequate diet, high in iron, ascorbic acid, and protein, with adequate calories to maintain desired weight should be given. Meals must be attractive and appealing. Encourage good eating habits and fit the meals of the patient into the schedule of the family so as to interrupt the home routine as little as possible.

SCIENCE

Vol. 111, March 24, 1950

* A very water-soluble riboflavin derivative. G. B. Stone.—p. 283.
* The comparative biochemistry of vitamin function. E. Beerstecher.—p. 300.

Riboflavin Derivative. Riboflavin does not dissolve in water or any other solvent very readily with the one exception of concentrated sulphuric acid. Investigation of this fact led to isolation of a very water-soluble riboflavin derivative. Fluorometric assay of this material yielded a value of 57.2 per cent riboflavin. In biologic assay there was some indication of a slight antivitamin activity of the compound. Further investigation is planned.

Comparative Biochemistry of Vitamin Function. The trend of recent years in the biologic sciences away from the descriptive and toward the functional viewpoint has increased interest and study in the comparative approach. Interest has also increased in the study of a particular functional entity throughout a range of species. This type of study has grouped vitamins into three groups based on chemical structure, natural distribution, and physiologic activity. The three groups are: (a) the B-complex vitamins; (b) fat-soluble vitamins; and (c) ascorbic acid. The requirement for the B-complex in all species is based on fundamental roles of metabolism. The other vitamins appear to have only highly specialized functions in certain tissues and cell groups.

SOUTHERN MEDICAL JOURNAL

Vol. 43, April, 1950

* Colic: its pattern in infancy and later life. A. McGee.—p. 335.
* Observations on premature infants fed mixtures of cow's milk. W. W. Waddell, A. P. Booker, and W. D. Donald.—p. 337.

Colic. Colic frequently occurs in early infancy. Milk is often the offending substance. It is best to change the type of animal milk than just the formula. A low-fat milk or goat's milk may help overcome the colic. A slow introduction of single vitamins and foods is valuable. A routine waiting period first of five days then three days gives useful knowledge and serves as a guide in avoiding future food sensitivity or at least ameliorating such sensitivity. Infants with colic are often sensitive to green vegetables and throughout life are usually poor vegetable eaters but fond of fruits. Infants with colic often develop a respiratory or digestive type of allergy.

Premature Infants Fed Cow's Milk. At the University of Virginia Hospitals a summary and comparison was made of the effect of formulas on 432 premature infants admitted to the hospital between 1925 and 1935, and 484 infants between 1944 to 1948. It was found that lactic acid milk was the best tolerated formula. It can be fed safely without dilution with water, thus affording a maximum caloric intake in a concentrated form. It is preferable to evaporated milk because its fat content can more easily be altered. All infants should receive suitable vitamin supplements.

SURGERY, GYNECOLOGY AND OBSTETRICS

Vol. 90, March, 1950

* Hematological changes and iron metabolism of normal pregnancy. C. E. Rath, W. Caton, D. E. Reid, C. A. Finch, and L. Conroy.—p. 320.
* Amount of carbohydrate required to prevent ketonuria in patients after operation. C. Wren and L. Sachar.—p. 349.

Iron Metabolism of Normal Pregnancy. Blood studies of thirty pregnant women revealed no instance of iron deficiency during any part of the prenatal period. All were ambulatory, in good health, with a normal dietary background without previous history of hematologic disorders.

Carbohydrate Required to Prevent Ketonuria. The urines of sixty-eight post-operative patients on varying parenteral carbohydrates were tested for the presence of acetone and glucose during the first three to four post-operative days. After operations under spinal anesthesia, the majority of patients receiving 100 or 150 gm. glucose a day as the sole source of nutrient showed acetonuria while the majority of those receiving 200 or 300 gm. glucose did not show acetone in the urine. After operations under ether, the incidence of ketonuria was much greater at a daily carbohydrate intake of 200 gm. than it was after operation under spinal anesthesia at the same intake. This indicates the superiority of the spinal anesthetic for diabetic patients and those with hepatic disease in whom the maintenance of liver glycogen and the avoidance of ketosis may be a problem. An average of 4 to 6 per cent of the glucose given intravenously was excreted in the urine, but there were marked and unpredictable variations in glycosuria from patient to patient.

AMERICAN RESTAURANT MAGAZINE

Vol. 24, March, 1950

* Spring meats. J. A. Cline.—p. 30.
Milk and cream dispensers. T. Trail.—p. 34.
* They'll eat out more often when you serve them these. L. D. Freeman.—p. 40.

Spring Meats. Spring meats are lamb and pork. The best distinguishing factor between lamb and mutton is the condition of the break joint, i.e., in lamb it is porous, moist, and reddish, but in mutton it is hard and white. High quality lamb cuts are best cooked by dry heat—roasting, broiling, and griddle-broiling. Other cuts, such as breast and neck, are best done by braising or stewing. Most cuts of utility lamb should be cooked by moist heat also. Lamb is cooked until medium or well done and should be served hot or cold, *never* lukewarm. Top quality pork has white fat and grayish pink flesh. Roasting of large cuts of top quality pork gives the best results, whereas small cuts such as chops or steaks are better done by braising or sometimes griddle-broiling. No matter what method is used, pork should be cooked well done. Cured ham may be baked, or the slices may be broiled, griddle-broiled, or fried. Important points for cooking both meats are that they should be cooked *slowly* and by use of a meat thermometer for roasts to assure the right degree of doneness.

Vegetables. Fresh spring vegetables taste better when mint, chives, cheese, or other flavors are added. Careful buying of only fresh crisp vegetables, followed up by careful preparation and cooking insures worth while accompaniments to your entrées. Vegetables can be used to enhance many dishes—vegetable sauces, vegetable soups, and chowders. Vegetable dishes, such as French fried cauliflower and vegetable-cheese tarts, should interest customers.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 8, March, 1950

* What's the story on precut frozen meat? H. W. Herman.—p. 45.

Precut Frozen Meat. A discussion of the advantages and disadvantages of buying meat and poultry on the precut, frozen basis is given. It is based on interviews with meat

FOR NOURISHING FEEDING
FOR APPETITE TEASING
YOUR 3 BIG HELPERS!

POPULAR *because it's oven-popped rice—so crisp it goes Snap! Crackle! Pop! Taste you never tire of!*

NOURISHING *because it contains brown rice nutritive values of thiamine, niacin and iron.*

AND RIGHT *for bland diets too—because the fiber content is less than one percent! Easy to digest!*

...AND RICE KRISPIES COME IN HANDY, TIME-SAVING "INDIVIDUAL" PACKAGES, TOO!

WHAT a help in the morning when it's rush here, rush there! You'll find Kellogg's individual packages cut down serving time . . . waste, too!

For a better breakfast . . . better serve KELLOGG'S
Only Kellogg's brings you Wheat, Rice, Corn and Soya! Some flaked, some popped, some shredded. All delicious—all nutritious!

MADE BY Kellogg's —THE GREATEST NAME IN CEREALS
Battle Creek and Omaha

packers and those active in food testing and analysis. The author predicts that in a few years precut frozen meat will be widely used. Conditions necessary to keep the frozen meat in good condition are discussed. Some of the advantages are: (a) It permits accurate inventory control and provides immediate predetermination of portion cost. (b) It assures uniform quality and size of portion and reduces waste. (c) It reduces labor cost. Some of the disadvantages are: (a) expense of refrigeration facilities and lack of sufficient packing house branches with local freezer facilities; (b) lack of sufficient variety in grades of meat offered and inadequate identification of type of animal from which some meats are obtained.

FOOD INDUSTRIES

Vol. 22, March, 1950

* Stored apples—why they're lost and how they're saved—Part III. L. Bisno.—p. 53.
* Practical quality control—the way to plan it and the way to apply it.—Part II. W. A. Gould.—p. 77.
* Foil protects crispness.—p. 111.
* Quickly tenderizes meat.—p. 114.
* Lower cost spinach tested in Florida.—p. 136.

Citrus harvest running well under average.—p. 142.

Apple Storage. Reduction of losses in stored apples may be effected at low cost by proper consideration of the following: variety; maturity, as to both degree and uniformity; source (region and area); age of orchard; freedom from defects; handling procedure; adequate storage conditions, including temperature, humidity, air circulation, sanitation, method of piling, and accessibility of all lots and of various representative parts of each lot; examination of fruit as stored and at intervals of about three months thereafter, using the pressure test as an aid; withdrawal of the various lots on the basis of the rate of softening and development of rot; and proper keeping of records and use of the data to improve purchasing and storage.

Practical Quality Control. This article discusses practical quality control and how to use it. Make sure you achieve efficiency by: (a) testing your products at every step, from receipt to delivery, (b) evaluating your sanitary conditions several times daily, and (c) controlling all of your operations and processes. The representative tests—the yardsticks with which the quality control technologist must be thoroughly conversant—are discussed in detail. The tests are described, showing the subordinate relationships of the two test classifications: namely, organoleptic subjective methods and objective methods.

Foil Protects Crispness. Lettuce packed in crates lined with aluminum foil and shipped across the country arrives with such crispness as to bring top market prices. The aluminum is such a good insulator that the crates contain most of the original ice after the trip, and the lettuce arrives with butt ends white.

New Meat Tenderizer. An enzymatic meat tenderizer has been introduced. It is an odorless, tasteless food powder composed of wheat flour, salt, dextrose, and vegetable enzymes. Applied by dusting lightly on the meat and working into the tissues with the points of a fork, its action is that of a mild "pre-digesting" which breaks down tough connective tissues in a few minutes.

New Type Spinach. A new tropical leaf plant, called "Florida spinach", is undergoing canning and freezing tests before its general release to processors.

HOTEL MANAGEMENT

Vol. 57, February, 1950

* Cooking ahead for faster service.—p. 74.
* Notes on hiring employees and job getting.—p. 71.

Vol. 57, March, 1950

* Monthly maintenance schedule and check list.—p. 57.
* How to avoid legal tangles in purchasing. C. A. Tibbetts.—p. 70.
* 79 steps for greater safety.—p. 74.

Faster Service. Two basic considerations in menu planning are: time customers may take to eat and how much they can pay. Many peoples' lunch periods have been shortened; thus the food service must be faster. Ready-to-serve dishes have become important in giving customers faster service. Among the suggestions for ready-to-serve food are baked Swiss steak, casseroles, and creamed foods. Some of the advantages of featuring ready-to-serve casseroles are: food may be kept hot until it reaches the customer; portion control; attractive service; reduced work during the rush hour; individuality of service; larger-looking portions; good utilization of left-overs. Also, casseroles may be served from heating units where there are no facilities for cooking.

Employment. A written record showing how each applicant is rated as well as periodically re-rated should be kept as a part of the employee's work history. Besides personal appearance, personality, and physical condition, the following should be considered: self-determination or ambition, initiative, adaptability, leadership, dependability, intelligence, and common sense. Everyone applying for a position attempts to sell himself and his abilities. Listed here are several rules of conduct which will help the applicant during the interview to sell himself effectively to the employer.

Maintenance Schedules. Charted here is a check list for regular scheduled inspections, lubrication, overhauling, and cleaning for hotel buildings and equipment. It may serve as a guide to the preparation of a maintenance schedule.

Safety. Outlined here are safety rules for serving food at tables and counters; handling dishes; food preparation; food storage; removal of refuse; care of floors, machinery, and equipment in kitchens; as well as safety in building maintenance.

Legal Principles for Purchasing. There are certain legal principles involved in purchasing. The knowledge of these would aid the buyer materially. This article gives the answer to such questions as; (a) Is a purchase order binding? (b) When does an order become a contract? (c) What type of acknowledgment is binding? (d) How can one be protected from having to pay more for goods than contracted?

INSTITUTIONS MAGAZINE

Vol. 26, March, 1950

* Want mechanization pattern? Follow management experience.—p. 1.

Many temperatures needed to supply required refrigeration.—p. 3.
Detailed directions for tasks speed waitress training.—p. 38.
Plan for efficient partial kitchen.—p. 62.
Cleansing, sanitizing rules for pots, pans, small utensils.—p. 101.
Best menu pricing plan depends on good cost data.—p. 106.

Machines. A conveyor belt installed in an Idaho hotel repaid the $3400 installation cost within nine months by savings in time and distance traveled by employees. Distances are expensive, for if you are paying $1 per hour per employee, it costs a penny for every 52.8 ft. the employee walks. Cost-cutting can become a reality when equipment is used to do a manual task faster and more economically.

THE MANAGEMENT REVIEW

Vol. 39, March, 1950

* Function of the interview in personnel administration.—p. 134.

Function of the Interview in Personnel Administration. The basic purpose of a program of personnel management is to help the institution make money. The interviewer must recognize himself as a part of a staff charged with the responsibility of strengthening line supervision and of help-

completely fulfills every carbohydrate requirement

KARO Syrup is a perfect carbohydrate...a mixture of dextrose, maltose and dextrins

FOR INFANT FEEDING physicians have prescribed KARO® Syrup for 30 years, recognizing it as an ideal milk modifier. For all types of formulas . . . for all infants; well or sick.

FOR HIGH CARBOHYDRATE FEEDING KARO, being a mixture of dextrose, maltose and dextrins, can be given in larger amounts than any single sugar.

IN GERIATRICS carbohydrates fill an important function. KARO Syrup is easily digested, well tolerated . . . resistant to intestinal fermentation. It is completely absorbed and utilized.

Medical Division

CORN PRODUCTS REFINING COMPANY

17 BATTERY PLACE • NEW YORK 4, N. Y.

P.S. KARO Syrup is readily available in case lots, from any food wholesaler.

ing supervisors to translate and to activate top management's human relations policies. The most important interviews, whether formal or informal, are those which the staff of the personnel department have with supervisors, department heads, and managers. The extent to which supervisors seek these interviews is a reliable index to the effectiveness of the personnel management operation.

NEWS BULLETIN OF THE NATIONAL RESTAURANT ASSOCIATION

Vol. 31, March, 1950

* Women's buying power—are you underestimating it?—p. 8.
* Digest of the new poultry regulations, standards, and grades of the United States Department of Agriculture Production and Marketing Administration.—Supplement.

Vol. 31, April, 1950

Quality food production.—p. 10.
* Food versus vitamin tablets.—p. 11.
National Restaurant Association Film List.—Supplement.

Woman's Influence on Restaurant Sales. The importance of catering to women is obvious to the restauranteur who realizes that women control 80 per cent to 85 per cent of the country's buying power. Women like simple foods—nutritious, low in calories, but high in taste and eye appeal. However, the male should not be ignored. A menu that appeals to both sexes is worth some time and study. It will pay off on the profit and loss statement. Women insist on absolute cleanliness and like a pleasant atmosphere. "Where shall we eat" is a man's question, and the woman answers it!

Poultry Grading and Inspection. The U.S.D.A. revised program for voluntary poultry grading and inspection is explained in detail. Charts giving specifications for standards of quality are given as well as pictures and explanations of the grade labels. Officially graded poultry that is individually labeled will now be of either A or B quality. Birds of C quality will not be individually labeled. Ninety per cent of the birds in the wholesale packs must be of the quality stated (A, B, or C for ready-to-cook and dressed poultry, and A or 1, B or 2, and C or 3 for live poultry). The remaining 10 per cent may be of the next lower quality, except for Grade C which requires birds to be of that quality or better. Factors determining quality of individual birds include: conformation, fleshing, fat covering, pin and vestigial feathers, cuts, tears, and broken bones, discoloration of skin, and freezer burn.

Scientists Prefer Food to Tablets. Research is proving that the requirement for one nutrient is largely dependent upon intake of other nutrients. Therefore, food is more valuable than nutrients taken in tablet form. It is important for the restaurant operator to see that food values are preserved through proper methods of storage, preparation, cooking, and serving. When vitamins and minerals are retained, food looks and tastes better and has greater sales appeal. Though the menu may carry a large, varied selection, the customer may not choose a well-balanced meal; so the menu should carry the proper combinations to insure necessary proteins, vitamins, minerals, and calories.

QUICK FROZEN FOODS

Vol. 12, March, 1950

* New turkey log refrozen without danger to flavor—p. 88.
Reports on 1949 fruit and vegetable pack.—p. 99.

Turkey Logs. Eliminating left-over problems is possible with the new development of "turkey logs." This product is an entire turkey including the giblets, which has been boned, pressed into cylindrical shape, and wrapped in aluminum sheeting. Tests show that in cooking, the loss from shrinkage is 18 per cent instead of the usual 30 to 40 per cent. Advantages include the ease of portion control, ease of slicing, and the fact that after cooking the turkey can be quick frozen again for later use. Distribution is under way on the Pacific Coast, and it is expected to be available in the Midwest soon.

RESTAURANT MANAGEMENT

Vol. 66, February, 1950

* Selecting the site of your restaurant. F. L. H. Heine.—p. 36.
* Modernizing a cafeteria. C. V. Fleet.—p. 42.
Equipment maintenance manuals. A. Clawson.—p. 46.

Vol. 56, March, 1950

* The fine art of serving seafood. E. C. Lillys.—p. 27.
* How to use films for employee training. D. E. Lundberg.—p. 35.
* Merchandising methods that will tempt housewives out of their homes. A. Easton.—p. 38.
* Equipment maintenance manuals. A. H. Clawson.—p. 42.
* Notes on hiring employees. H. Chase.—p. 46.

Restaurant Location. Enjoyable and profitable operations will result if in planning the expansion or opening of a restaurant, the following pattern is followed: First, choose "your" kind of restaurant by deciding the type of food service best suited to you, how you want to give this service, and what type of clientele you prefer. Then follow this through with a survey of all the steps involved in setting up a new business. In surveying a community the educational, recreational, and cultural facilities, public utilities, and seasonability of trade, as well as transportation facilities should be considered. By thorough preliminary work in assembling and weighing the advantages and disadvantages, both tangible and intangible, a location can be chosen which will assure continued success for a new venture into the restaurant business.

Modernizing a Cafeteria. By modernizing its cafeteria, a Seattle department store increased the food check from an average 36 cents to 67 cents; one-third more people were served; and the number of employees was reduced by 54 per cent. Included in the article are illustrations showing the "before and after" renovation. The snack bar has been equipped with modern conveniences which are also labor-saving devices, and the kitchen is so arranged that each person has in his working area all the necessary equipment.

Seafood Cookery. A New York restaurant described and pictured here, specializes in serving seafood. The carefully planned details of preparation, cooking, and service result in a gross profit of 10 per cent. Points on which to judge a well-cooked sea bass are listed. The art of serving delicious seafood revolves around careful selection and ordering; weighing and counting fish on delivery; cleanliness of the kitchen, utensils, and the fish itself; storage of fish in finely chopped ice; proper cooking procedures; and immediate service.

Employee Training Films. A discussion is presented in this article of how to use films for employee training. Over seventy films are listed which are now available for training waitresses, waiters, food handlers, and department heads.

Merchandising Methods. A list of steps are presented which are basic factors in selling better food and more of it at a greater profit. The following points are emphasized: (a) serving food which requires more skill and preparation time than the ordinary run of home-cooked food; (b) serving specialty dishes; (c) using the latest methods of preparation; (d) promoting special foods for popular nights; and (e) using food that gives the best return for the money.

Equipment Maintenance. The equipment maintenance manual charts presented here include instructions for the following: (a) cleaning a gas stack oven; (b) cleaning an electric stack oven; (c) cleaning a bench-type manual can opener; and (d) operating a bench-type manual can opener.

Serve genuine

JELL-O DESSERTS

if you want to

cut your food costs!

There's no substitute for genuine Jell-O desserts—America's favorites—if you want to attract more customers and whittle down your food costs.

For as little as 1½¢ to 4¢ a portion, you can serve a tempting variety of colorful, easy-to-make, top-quality desserts with Jell-O and Jell-O Puddings and Pie Fillings.

Many desserts cost 2 or 3 times as much! With desserts alone accounting for up to 20% of your total food costs, Jell-O desserts, served every day, can mean a real saving.

Be sure you serve genuine Jell-O flavored gelatin . . . Jell-O Puddings . . . Jell-O Lemon Pie Filling. Jell-O is the brand your customers know best and prefer to all other packaged desserts. Best in flavor and quality for more than 50 years!

Any slight difference in initial cost is negligible when you weigh it against your gain in customer acceptance . . . quality . . . and volume!

FREE RECIPE SERVICE:

Ask your General Foods representative about these and many other Jell-O and Jell-O Pudding recipes, or write General Foods, Institution Department, 250 Park Ave., New York 17, New York.

Products of General Foods

STRAWBERRY CHIFFON PIE

Make the most of the berry season with this tempting pie! Fresh strawberries, sliced and sweetened, in Strawberry Jell-O, with egg white meringue and whipped cream folded in for airy lightness. Costs less than . . .

4¢ A SERVING!

LEMON COCONUT LAYER CAKE

Use tangy Jell-O Lemon Pie Filling for a fresh, appealing cake. Add coconut or crushed pineapple to filling (if desired) between layers. Spread plain Lemon Filling on top and sides and sprinkle thickly with coconut. Costs about . . .

4¢ A SERVING!

CHOCOLATE PEPPERMINT PUDDING

Crush peppermint candies and add to creamy Jell-O Chocolate Pudding (¼ cup candy to 1 quart chilled pudding). Top with pink-tinted whipped cream and a sprinkle of crushed candy. Simple, and very profitable at a cost of about . . .

4¢ A SERVING!

JELL-O, JELL-O PUDDINGS
JELL-O LEMON PIE FILLING

Jell-O is a registered trade-mark of General Foods Corporation

News Notes

Dr. Hoobler Honored. In April, Dr. Icie Macy Hoobler, Director of the Research Laboratory, Children's Fund of Michigan, Detroit, was made an honorary member of Iota Sigma Pi, honorary professional society for women in chemistry at the 117th national meeting of the American Chemical Society in Detroit. The membership was conferred after unanimous approval by all chapters of the society.

Summer Workshops. The eleventh annual conference and workshop for school lunch managers, conducted by the Alabama State Department of Education, will be held at the *University of Alabama*, Tuscaloosa, June 5 to 16. Dr. Agnes Ellen Harris, Dean, School of Home Economics, and Dr. E. Neige Todhunter, Professor of Home Economics, are directors of the conference staff. Classes for a "Newcomers" group, to be held June 5 to 10, will cover menu planning and food purchasing, food preparation, first aid and fire prevention, and problems of school lunch management. Advanced classes for an "Old Friends" group, to meet June 11 to 16, will include: kitchen plans, food preparation, organization, and management, equipment care and selection, and nutrition of children.

The third workshop on nutrition education, sponsored by Sperry Division of General Mills, Inc., will be given August 21 to September 1 at *Stanford University*. Emphasis in the course will be on the integration of nutrition education into the elementary curriculum. Dr. Oliver E. Byrd, Professor of Health Education, will direct the workshop.

Correction. An error was made in the Missouri Dietetic Association's news in April issue of the *Journal*, in which Marguerite Ross was identified with the Texas State College for Women. Miss Ross is actually with the North Texas State College of Denton.

Air Force Promotion. On May 1, Miriam E. Perry, Chief of the Air Force Women's Medical Specialist Corps, was promoted to the rank of Lieutenant Colonel. The promotion was made by General Hoyt S. Vandenberg, Chief of Staff of the U.S. Air Force.

U.S.A.F. Training for Dietitians. The Air Force has announced that a limited number of women will be accepted for training as dietetic interns each year. Air Force dietetic interns will receive training as part of the dietetic internship conducted by the Army Medical Department at Brooke Army Medical Center, Fort Sam Houston. To be eligible for a dietetic internship, an applicant must have a bachelor of science degree in either food and nutrition or in institutional management. Successful applicants will be commissioned as second lieutenants in the Air Force Reserve, but must express a desire, in writing, to enter the regular component of the Air Force on completion of the training.

Children's Bureau Openings. Marjorie M. Heseltine, Director of the Nutrition Unit of the U.S. Children's Bureau, has notified the *Journal* that the Civil Service Commission is currently accepting applications for an examination for the position of public health nutritionist in the Children's Bureau and the Public Health Service of the Federal Security Agency. These positions, which range in salary from $4479 to $7432 annually, are described in Announcement No. 202 (Unassembled), "Agriculturist," mentioned in the February issue of the JOURNAL. Copies of this announcement may be obtained by writing to the U.S. Civil Service Commission, Washington 25.

New Training Film. The National Restaurant Association, in cooperation with the University of Chicago, has produced a new film titled "Company's Coming," which has been planned for use in training restaurant employees. Emphasis is given to courtesy, hospitality, and teamwork. The premier showing of the film took place at the National Restaurant Association convention in May. The film is a 16 mm., sound-motion picture and requires 11 min. showing time. It is in black and white.

UNESCO-FAO Joint Food Program. An educational program on "Food and People" is being jointly sponsored this year by UNESCO and FAO in an effort to further discussion of the world nutrition problem. The U.S. National Commission for UNESCO has prepared a number of discussion guides. A limited number of comprehensive kits containing pertinent publications and materials are being distributed to officers of various organizations, and larger quantities of several free materials are available for wider distribution. These include: a pamphlet, "United States Agriculture in the World Food Situation"; a fact sheet, "Food and People"; a radio script, "Feeding a Hungry World"; a film list; and background information on the UNESCO National Commission programs and the FAO programs.

Also available at small cost are a series of six illustrated pamphlets by distinguished writers which can be ordered from the New York office of UNESCO, 405 East 42nd Street, New York 12, at a cost of $1.65 for the set. Included in this set is a discussion of "The Family's Food" by Margaret Mead, which was originally published in July, 1949 by the Bureau of Current Affairs, London. Written from the anthropologist's viewpoint, Dr. Mead had divided her discussion into four chapters: "How Do We Get Our Food?"; "How Do We Learn Our Food Habits?"; "What Changes Are Needed?"; and "How Can These Changes Be Brought About?"

Plentiful Foods. The following foods are expected to be plentiful during June, according to the U.S.D.A.

Vegetables

Beans
Canned Lima
Snap
Corn, Canned
Lettuce
Potatoes, new
Spinach
Tomatoes

Protein foods

Chickens—broilers and fryers
Dairy products
Eggs
Hens
Pork and pork products

Other foods

Honey

Booklet on Diets of Rural Families. "Diets of Families in the Open Country . . . a Georgia and an Ohio County Summer, 1945" is the title of the U.S.D.A.'s Miscellaneous Publication No. 704. In it are discussed dietary habits and shortages that occur among lower-income rural families—both farmers and nonfarmers. The authors, Sadye F. Adelson and Ennis C. Blake of the Bureau of Human Nutrition and Home Economics, point out that the most badly lacking nutrients are: calcium, vitamin A, and ascorbic acid. Georgia families had fewer milk cows, and they bought less food to supplement home-produced food that Ohioans did. To improve the diets, the authors recommend more oranges for the Georgia county and high-calcium, self-rising flour and home produced vegetables and fruits for the Ohio families. The booklet can be obtained from the Superintendent of Documents, Washington, for 25 cents a copy.

Government Food Consumption Reports. Two additional reports in the U.S.D.A.'s series on "Commodity Summaries" have been released by the Bureau of Human Nutrition and Home

NOW
MILLED
WHITE RICE
CAN MEET MODERN
NUTRITIONAL DEMANDS
No longer need milled white rice be branded as a nutritionally inferior food. The greatest nutritional experiment* of all time, involving 100,000 people, has demonstrated the practicability and ease of adding lacking vitamins and minerals by means of a specially made "premix."
The addition is accomplished by making 1 particle of "premix" the vehicle for enough vitamins and minerals to impart desired minimum levels for 200 particles of the final product. This 1 premix particle is added to 199 particles of regular milled white rice by a simple mechanical feeder.
Vitamin enriching premixes are commonly used by wheat flour millers, corn millers and manufacturers of macaroni products. However, the popular practice of washing or rinsing rice before cooking renders the usual type of premix useless since the vitamin content dissolves in the water and is lost. As a leader in world production of vitamins, Hoffmann-La Roche looked for a means of hurdling this problem, found it, and has made it available to the rice milling industry. The Hoffmann-La Roche method of improvement is covered by U.S. patents #2,381,342, #2,381,343 and #2,475,133. Rice Enrichment, Inc., of New Orleans has been licensed to manufacture and distribute premix. For further information write to our Vitamin Division.
*The experiment is under the joint auspices of the Williams-Waterman Fund, Republic of the Philippines Department of Health, United States Public Health Service Rehabilitation Program, National Rice and Corn Corporation of the Philippines and Hoffmann-La Roche Inc. Preliminary reports published thus far have appeared in the Journal of Nutrition of August 1949, Journal of the Philippine Medical Association, November 1949, and the Rice Journal of April, 1950.
ROCHE
Vitamins for Enrichment
VITAMIN DIVISION
HOFFMANN-LA ROCHE, INC. • NUTLEY 10, N. J.
FORTIFIED LONG GRAIN
FORTIFIED MEDIUM GRAIN
FORTIFIED PEARL

Economics: No. 7, "Potatoes and Sweet Potatoes Consumed by City Families, Based on Food Consumption Surveys of 1948"; and No. 8, "Citrus Fruit Consumed by City Families." The reports are based on surveys taken in 68 cities, in addition to more detailed accounts from families in Buffalo, Minneapolis-St. Paul, San Francisco, and Birmingham. The report on potato consumption, No. 7, points out that potatoes and sweet potatoes take only a small part of the food budget, but that they are eaten by 96 per cent of city families—7.1 lb. a week per family or 2.1 lb. per person. White potatoes are used widely by 95 per cent of the city families. They seem to be most popular among middle class families, for purchases of white potatoes increase in families with incomes up to $4000, and then decrease in the higher bracket. The northern cities used more white potatoes than did the southern cities, and Birmingham consumed about twice the amount of sweet potatoes of any other city in the survey.

The summary on citrus fruit consumption discloses these fruits take 3 cents of each food dollar; that they are widely eaten by city families; and that purchases of citrus fruit increase greatly with family income, although the proportion of the food dollar spent for citrus fruit is substantially the same at all income levels. Fresh oranges were the most popular. Winter and spring are the periods of largest citrus fruit purchases. Birmingham families were found to consume less citrus fruit than families in any other of the three cities, which was attributed to Birmingham's largest percentage of low-income families. There was more canned citrus fruit and juice consumed in 1948 than in 1942.

Food Surveys Available. Three more preliminary reports in the series on the 1948 food consumption surveys have been prepared by the Bureau of Human Nutrition and Home Economics: (a) Family Food Consumption in Four Cities, Winter, 1948; (b) Nutritive Value of Family Diets Four Cities, Winter, 1948, II. Distribution of Families Classified by Nutritive Content of Diets; and (c) Family Food Consumption for Three Seasons in Buffalo, New York, 1 Week—Winter, Spring, and Fall, 1948. The cities surveyed are Buffalo, Birmingham, Minneapolis-St. Paul, and San Francisco.

Career Booklet. "Look Ahead . . . to career . . . home" is the new vocational guidance booklet prepared by the Department of Home Economics, University of Idaho, Moscow. Opportunities in dietetics, homemaking, teaching, business, journalism, nutrition research, and institution management are suggested for girls in the home economics field.

Time and Motion Study Films. Ronald Wishart, Kansas State College, Manhattan, spoke to dietitians at the February workshop held at the University of Kansas Medical Center, on the use of time and motion studies. In his address, he recommended the following films, available from the Visual Aid Division, Iowa University, Iowa City: *Motion Study Application*, No. U979, 744 ft. of 16-mm. film—rental $4 for two days; *Flow Process Charts and How to Use Them*, 700 ft. of 16-mm. color film—rental $3 for two days.

Shopping Booklet. A new pamphlet, "Better Buymanship—Meat, Fish, Poultry, and Eggs," has been published by Household Finance Corporation to help the housewife shop economically. The thirty-two-page publication gives information on quality, shows the cuts or forms to look for, and stresses economical marketing. Grading and inspection regulations and a weights and measures chart are also included. Copies are available for 5 cents each, from the Consumer Education Department, Household Finance Corporation, 919 North Michigan Avenue, Chicago 11.

Nicaraguan Dishes. Lewis E. Long of the Foreign Agricultural Relations Office reports that several appetizing dishes have been developed in Nicaragua. They include: (a) *Pinalea*, made by boiling four parts toasted corn meal and one part chocolate in water and then sweetening. This makes a beverage which can be served hot or cold, with or without cream; (b) *Chicharrones*, a snack made of pork rind fried to a crisp and salted; (c) *Necatomal*, an entrée made by enclosing an ounce of lean meat or chicken in soft corn meal dough about the size of a man's fist, then wrapping in banana leaf, and boiling until thoroughly done.

If You Need SPECIALIZED TOOLS For MASS FOOD PRODUCTION— SPECIALIZATION CALLS FOR

BLODGETT

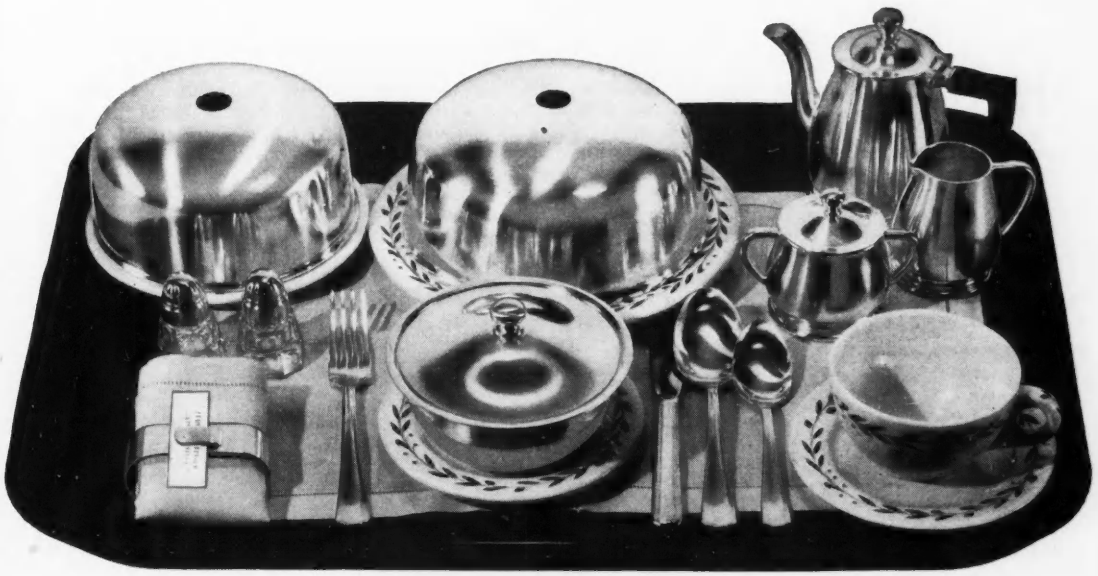
Mass feeding is mass production—in roadside stands or gigantic industrial cafeterias. In either case, specialized cooking tools are "musts" for smooth-flowing, labor-saving, profit-making operation. Blodgett sectional ovens for baking, roasting and general food cookery are specifically designed to provide flexibility and menu-variety, combined with cleaning and operating ease and unequalled performance. One of Blodgett's twenty-four models was designed especially for your operation. Ask your dealer to show you—today!

ONE HUNDRED YEARS OF

THE G. S. BLODGETT CO., INC.

OVENS

50 LAKESIDE AVE., BURLINGTON, VERMONT



Breakfast is Served

...IN THE MOST FITTING MANNER

WALLACE breakfast, luncheon and dinner silverware sets didn't *just happen*. They were designed after an exhaustive study of the *special* requirements of well-run hospitals for patient food service. They *fit the tray*—an item of importance to the dietician. And, they "fit" in many other ways, with emphasis on economy, cleanliness, durability. The prestige advantage the hospital will receive because of the value and beauty connected with silver is considered an important factor by progressive hospital management everywhere. The use of silverware also greatly reduces breakage expense.

For further details, consult your Wallace Supply Dealer, or write to us.

WALLACE SILVERSMITHS

WALLINGFORD, CONN.

Nicaraguans also drink orange juice with a drop of vanilla in it, and Mr. Lewis recommends it, although he says the first sip may be a surprise.

Fried Turkey. Turkey growers in the East this spring plan to test the demand for young turkeys suitable for frying or broiling. If they find a sufficient market to create a paying business, fryer turkeys would be produced the year around. The Department of Agriculture reports that the limited supply of turkey fryers has been well received by those to whom it has been served.

Birds about three months old of the smaller varieties with fewer pin-feathers are best for frying or broiling. They are split for broiling or disjointed for frying. Because thigh and breast pieces are larger than in chickens, they may be divided for cooking. Turkey fryers are cooked just as chickens.

Cold Storage Eggs. When their interior quality is approximately the same, eggs removed from cold storage and eggs that have not been in cold storage lose quality at about the same rate. This was indicated in recent studies done by the Bureau of Animal Industry of the Agricultural Research Administration and the Poultry Branch, Production and Marketing Administration, U.S.D.A.

Groups of both cold-storage and non-storage eggs, of comparable quality, were examined after being held at different temperatures for various periods. This examination included candling, as well as scoring of broken eggs and other measurements of quality made after the eggs were broken. Decreases in interior quality were found to be similar for both kinds of eggs at each temperature level and after each holding period, and both kinds tended to lose weight at approximately the same rate.

Don't miss seeing these new Boontonware items
Sugar Bowl w/cover, 11 oz.
Creamer, 9 oz.
Nappy, 11 oz.
Vegetable Serving Dish or Salad Bowl, 8½"
Vegetable Serving Dish, Divided, 8½"
Everywhere the switch is to Boontonware.
Hotels, Restaurants, Institutions, Diners, and Camps
are discovering that it is Melmac* plastic
at its best in durability, design, and color . . .
tableware economy that you have never known before.
*REG. U. S. PAT. OFF.
Before you buy, see and handle..
Boontonware
It lasts and lasts and lasts
23 items in 6 colors
Contact your regular Dealer or write direct to . . .
BOONTON MOLDING COMPANY, BOONTON, N. J.

News of State Associations

Arkansas Dietetic Association. On May 30, in Hot Springs, the Arkansas Dietetic Association held its annual convention in conjunction with the Arkansas Hospital Association. The program included an address of "How Good Is Your Food Service," by Alice H. Smith, Chief, Nutrition Section, Michigan Department of Health" and "Some Recommendations for Safe Procedures in the Preparation of Infant Formula" by H. E. O. Heineman, Director, Research Development, Pet Milk Company, St. Louis.

California Dietetic Association. The *Bay Section* held its April meeting aboard the dining car of the California Zephyr, where Cecil Staley, Dining Car Inspector of Western Pacific Railroad's new streamliner, talked on the operation of a railroad dining car. The big problem, he pointed out, is storage space for the three-day trip to Chicago.

The *Sacramento Area Section*, organized in the fall with Joan Tracy, Mercy Hospital, as President, has had an active year. At one meeting, Helen Dempsey of Mills College, discussed cost accounting, and at another meeting Chester Cohen, Director of Environmental Sanitation for the Sacramento City Health Department, led a discussion on state and local food handling ordinances. In April the group were guests of the Home Economics Club of Stockton College. The topic of the meeting was "Professional Education."

At the January meeting of the *San Diego Section*, three films were shown: "The Story of Wendy Hill," about a girl who learns that she has diabetes; "How to Stretch the Food Budget"; and "The Louse, Flea, and Fly," a comedy which, shows the great harm these insects cause.

Connecticut Dietetic Association. On March 15, the Connecticut Dietetic Association met at the Veterans Administration Hospital, Newington. The program was on administrative topics. In the morning Hiram Sibley, Executive Director of the Connecticut Hospital Association, talked on "Why Cost Controls?" His talk was followed by a panel discussion on cost control in the hospital, commercial operation, school lunch program, and university food service. In the afternoon, Clarice D. Gullickson, Veterans Administration Central Office, Washington, spoke on "Equipment, Work Flow, and Personnel Utilization in Relation to Cost Control."

The spring meeting was held on May 3 at the Connecticut Agricultural Experiment Station in New Haven. The pro-

A POSITIVE MEANS OF

Promoting Nutritional Adequacy

Whenever the need for dietary supplementation arises—as in anorexia, perverted food habits, during and following illness, and in gastrointestinal disease—the regular use of Ovaltine in milk can be of signal value. Taken daily, this well-rounded multiple dietary supplement gives virtual assurance of nutritional adequacy.

As indicated in the table, Ovaltine in milk provides virtually all essential nutrients in balanced, generous amounts. Its protein is biologically complete. It supplies not only B complex vitamins, but also vitamins A and D as well as ascorbic acid and the essential minerals iron, calcium and phosphorus.

The delightful taste and easy digestibility of Ovaltine in milk is relished by patients of all ages, hence the recommended three glassfuls daily are taken without resistance.

THE WANDER COMPANY, 360 N. MICHIGAN AVE., CHICAGO 1, ILL.

Ovaltine

Three servings of Ovaltine, each made of ½ oz. of Ovaltine and 8 oz. of whole milk,* provide:

PROTEIN	32 Gm.	VITAMIN A	3000 I.U.
FAT	32 Gm.	VITAMIN B_1	1.16 mg.
CARBOHYDRATE	65 Gm.	RIBOFLAVIN	2.0 mg.
CALCIUM	1.12 Gm	NIACIN	6.8 mg.
PHOSPHORUS	0.94 Gm	VITAMIN C	30.0 mg.
IRON	12 mg.	VITAMIN D	417 I.U.
COPPER	0.5 mg.	CALORIES	676

*Based on average reported values for milk.

Two kinds, Plain and Chocolate Flavored. Serving for serving, they are virtually identical in nutritional content.

gram included a tour of the station and demonstrations of food and drug analyses, the effect of various chemicals on heartbeat of an insect, ultraviolet treatment of plants and the use of white rats in vitamin work. Dr. Hubert Vickery, Head of the Biochemistry Department, spoke on "Early Work of Osborne and Mendel in Nutrition." At the dinner meeting, Helen Wadsworth, Hartford Hospital, gave an historical sketch of the Connecticut Dietetic Association. Dr. Rebecca Solomon, Clinical Psychiatrist, Connecticut State Department of Health, spoke on "How Emotions Influence Eating Habits."

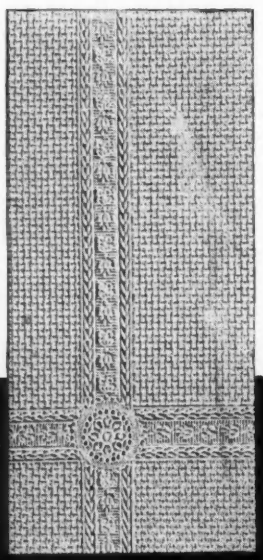
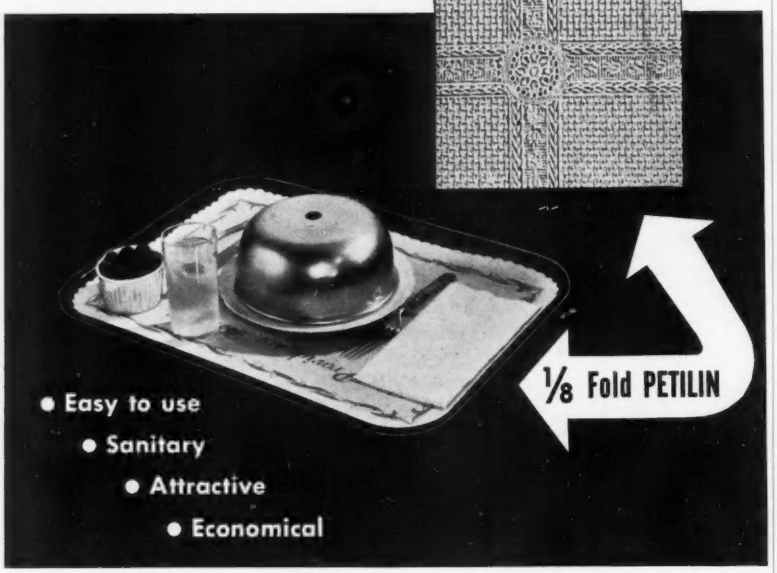
Indiana Dietetic Association. The Indiana State Nutrition Council joined the Indiana Dietetic Association for the 18th annual spring convention April 28 and 29 in Indianapolis. Speeches included "Modern Trends in Diet Therapy" by Ruth Yakel, Therapeutic Dietitian, Indiana University Medical Center, Indianapolis, and "Diet in Pre- and Post-Operative Cases" by Dr. J. S. Battersby, Assistant Professor of Surgery, Indiana University of Medicine. A movie, "Malnutrition in the Hospital Patient," by E. R. Squibb and Sons, was shown. Julia Kiene, Director of Westinghouse Corporation's Home Economics Institute at Mansfield, Ohio, reported on a nutrition study of sixty-four families in Philadelphia. Mary Reeves of the Children's Bureau, Federal Security Agency, Chicago, Illinois, spoke on "The Dietitian and Nutritionist Serve the Community." At the banquet Friday night, Dr. Russell Wilder, Professor of Medicine, Mayo Clinic, gave an interesting account of a scientific nutrition survey in Newfoundland and showed colored slides to illustrate the findings. Saturday morning N. E. Bess, Executive Secretary, Indiana Restaurant Association, talked on "Current Trend in Foods," and Richard Emery, Public Schools of Indiana, spoke on "Human Relations and Conference Techniques."

Kansas Dietetic Association. This year the Kansas Association has had a Hospital Facilities Committee which has been active in working with the Hospital Facilities Section of the State Board of Health. Plans sent to the State Board for approval under the Hill-Burton hospital construction act have been checked by this committee as to layout for the food service unit, relation of one unit to another, direction of flow of traffic, placement and adequacy of equipment, provision of refrigeration units, location of dining rooms in relation to the kitchen, as well as the other fundamental features of planning. Plans for some ten hospitals, ranging from 25 to 150 beds have been examined. One problem encountered is the lack of specifications for size of equipment, type of construction, and materials which are submitted to the State Board of Health. To help with this situation, the committee is working on a booklet which will include lists of equipment, general specifications and number needed for a 25-, 50-, and 100-bed hospital. It will actually be a revised edition of a list published by the National Hospital Facilities Section and will include more precise specifications, for the committee is checking equipment needed and omitting unnecessary articles.

In Kansas City, one dietitian each month goes to the cooking class at the Pilot Club for the Sightless to speak about nutrition problems, including meal planning, costs, child feeding, cooking fads, idiosyncrasies, and weight problems. In April, Helen Crosswhite, dietetic intern at the University of Kansas Medical Center, spoke on "1000 Meals a Year." In May, Conie Foote of the Marketing Extension Service spoke on "Food Cents."

Beth McCune, University of Kansas, Lawrence, represented the Kansas Dietetic Association on Career Day at Richmond High School, Richmond, Kansas. Mary Alice Streator, Santa Fe Hospital, Topeka, spoke to the girls at Atchison High School about dietetics on Career Day April 27. Sister M. Josella, dietitian at St. Anthony Hospital, Hays, was interviewed on "Dietetics, A Career" on station KAYS in one of a series of broadcasts on "Careers for Women," March 7. An article on the interview appeared the following Sunday in the Hays *Daily News*.

Eighty-five high schools responded to a letter asking if they would like to use a record describing the dietetic profession and the work of a dietitian. "Dietetics—for Better Living"—the A.D.A. poster

An Absorbent Cellulose Napkin
DESIGNED for
TRAY SERVICE
It's Milapaco's ⅛ fold napkin in the Petilin pattern. It BELONGS with your tray.



Ask your paper supplier, or write for samples.
MILWAUKEE LACE PAPER CO.
1306 E. Meinecke Ave., Milwaukee 12, Wis.

VAN CAMP LABORATORIES

A DIVISION OF VAN CAMP SEA FOOD CO., INC.

Introduce 2 OUTSTANDING NEW FOODS...

Both of which have been accepted by the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

1

DIETETIC TUNA

Due to its low salt content, DIETETIC TUNA is suitable for use in the compounding of low-sodium diets for the dietetic management of several diseases.

Its cholesterol and fat content are very low and it is, therefore, an excellent source of protein in dietary treatment.

DIETETIC TUNA is a very valuable adjunct to restricted diets for WEIGHT REDUCTION and in pregnancy. It supplies a well proportioned source of all the necessary amino acids without increasing the fat and carbohydrate content of the diets.

Because of its high protein content, its use is recommended also in the feeding of the aged and in physical rehabilitation.

2

BABY FOOD STRAINED TUNA

The outstanding feature of this product is its exceptionally high protein content . . . more than 92% of the total solids supplying a rich source of amino acids, the essential building blocks of body proteins. (1)

Noteworthy is the high content of Animal Protein Factor and Vitamin B_{12}. Recent work has indicated that B_{12} may have special value in childhood nutrition. (2)

Another feature of BABY FOOD Strained Tuna is the *high fluorine content.* This element has recently gained special recognition, as it has been shown that satisfactory quantities of fluorine consumed during the *development of teeth* help protect against future dental decay. The amount of fluorine in most foods is usually lower than apparently required, and therefore BABY FOOD Strained Tuna should be a welcome addition to the diets of infants and young children. (3)

Because of its pleasant taste and smooth texture BABY FOOD Strained Tuna is well suited for dietary management of conditions where a *soft, low-residual diet* is indicated.

1. Dunn, M. S. "The Nutritional Value of Fish Proteins." (Institute of Food Technologists, San Francisco meeting, July, 1949.)
   Geiger, E. "Nutritive Value of Fish Protein" (in "Progress of the Chemistry of Organic Natural Products" Ed. by L. Zechmeister, 5 275 [1948]).
2. Wetzel, N. C., W. C. Fargo, J. H. Smith and J. Helikson—"Growth Failure in School Children as Associated with Vitamin B_{12} Deficiency-Response to Oral Therapy." (Science, 110, 651 [1949].)
3. Editorial, "The Lancet" (London) Oct. 8, 1949, Page 664.
   McClure, F. J., "Fluorine in Foods." Public Health Reports, 64 1061 (1949).

Further information will be gladly supplied upon request.

VAN CAMP LABORATORIES

Division of Van Camp Sea Food Co., Inc. Terminal Island, California

and "Dietitians in Demand" also were sent with the records.

The *Topeka Dietetic Association* held its April meeting at the home of Esther Koerner. After a "covered dish" supper, dietitians enjoyed a tour of the State Hospital.

Massachusetts Dietetic Association. Carlene Millican, Therapeutic Dietitian at the Massachusetts General Hospital, was interviewed by Winnie Liefer on Station WERS for an hour program, "Career Women of the Day." The script, which dramatized a dietitian's career, was prepared by Miss Millican and Louise Hatch. One of the dietetic meetings held jointly with the Massachusetts Home Economics Association and the New England Hospital Assembly was a program at Simmons College for all vocational guidance persons in the state. Tours were conducted through the Home Economics Department of Simmons and the Dietary Department of Massachusetts General. Representatives from colleges in the area discussed the necessary educational background and various careers in the field. In April the Massachusetts Dietitians met with the Massachusetts Public Health Association for a meeting on "The Role of the Institutional Dietary Consultant."

Montana Dietetic Association. The annual meeting of the Montana Dietetic Association was held in February in Billings.

Nebraska Dietetic Association. On March 24 and 25, the Nebraska Dietetic Association held a joint meeting with the Home Economics Association in Kearney. The Junior Chamber of Commerce of Kearney arranged an elaborate appliance show called "The Kitchen Queen" to coincide with the convention dates, and the Dietetic Association had a booth at the show which illustrated the functions of the dietitian. A variety of literature was distributed. This project was undertaken by the Professional Education Section as part of public relations. Other activities have included participation in Hospitality Day at the University of Nebraska, at which "Double Feature" was distributed and the A.D.A. Kodachrome slides were shown. Omaha dietitians took part in a similar Hospitality Day at the University of Omaha held for high school girls. The Association has also made available to the State Vocational Education Department 550 copies of "Dietitians Today" which are being included in the guidance information kits distributed to high schools in the state.

The Diet Therapy Section is in the process of preparing a handbook for nursing home operators which will contain information on feeding the aged.

The Food Administration Section in Nebraska has been working with the State Board of Health in assisting with the planning of the dietary departments hospitals being constructed under the Hill-Burton Act.

New Jersey Dietetic Association. The Diet Therapy Section sponsored a meeting in Newark on May 20. Martha Benson, Home Economics Consultant for the New Jersey State Department of Institutions and Agencies, spoke on "Setting Standards for Budget Allowances." The Diet Therapy Section has been standardizing special diets as the year's project. The items of these diets will be priced by the Budgeting Council of the State of New Jersey, and the standards and allowances will be published in a manual prepared by the New Jersey State Department of Institutions and Agencies. The annual spring meeting was held May 10 at Plainfield, New Jersey.

New York State Dietetic Association. The Greater New York Southeastern District Home Economics Association held a joint meeting with the Public Health Group and the Greater New York Dietetic Association on March 23. Dr. H. H. Giles, Professor of Education and Director, Center for Human Relations Studies at New York University, spoke on "The Professional Worker and the Growing Science of Human Relations." Preceding the dinner, members of the association saw a demonstration of radar equipment given by an instructor of Sperry Gyroscope School.

The *Greater New York Dietetic Association* held its April meeting at St. Vincent's Hospital. Dr. Louis Rousselot, Director of Surgery at St. Vincent's, talked on "Application of Diets in the Pre- and Post-Operative Management of Surgical Cases." Dr. Rousselot gave case reports on total gastrectomy, ulcerative colitis, cirrhosis, and portal hypertension. Before the lecture, members visited the new main kitchen in the Alfred E. Smith Memorial wing of the hospital.

North Dakota Dietetic Association. The fifth annual convention of the North Dakota Dietetic Association met at Grand Forks on May 10. Featured speakers at the convention were Dr. L. P. Howell of Mayo Clinic, Rochester; Dr. E. A. Haunz, Grand Forks Clinic; and Winifred H. Erickson, A.D.A. Treasurer and Director of Dietetics, Ancker Hospital, St. Paul.

Ohio Dietetic Association. "Food and Your Future" was the theme of the 29th annual convention of the Ohio Dietetic Association in Cincinnati, April 28 and 29. Three hundred and sixty dietitians and exhibitors registered for the meetings. Speakers and their subjects were: Asta Smith, Greenfield Mills Cafeterias, "Tricks of the Trade"; Marion Gates, Lunchroom Manager, Western Hills High School, Cincinnati, "Techniques—The Teen Ager's Lunch"; Dr. Mary B. Patton, Ohio State University, "Nine Women Test Calcium Tablets"; Jane Garvin, Children's Hospital, Cincinnati, "Feeding Children—Everyone's Business"; and Jeanne Paris, Kroger Food Foundation, Cincinnati, "New Methods of Food Marketing."

At the luncheon Friday, John T. Lynch, Director of Training, Monarch Finer Foods, spoke on "The Salesman

They're Sugar Free!

CELLU QUENCH & COOL-SIP

CELLU QUENCH—A sparkling refreshment, without food value. 5 tangy flavors: Orange, Root Beer, Ginger, Cola, and Wild Cherry.

CELLU COOL SIP—Flavoring for beverages. One bottle makes about 24 glasses. 4 flavors: Orange, Lime, Raspberry, and Cherry. Also flavor sauces, puddings, gelatin desserts.

SEND FOR CELLU CATALOG OF DIET SUGGESTIONS

CELLU LOW CARBOHYDRATE Dietary Foods

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 West Van Buren Street Chicago 12, Illinois

OVER 100 CELLU FOODS AVAILABLE

"Open Sesame!"
FOR QUALIFIED
DIETITIANS
PHYSICAL THERAPISTS
OCCUPATIONAL THERAPISTS
That's what the new Women's Medical Specialist Corps can mean to you—a modern magical key to a satisfying and rewarding career in the U. S. Army or the U. S. Air Force.
Recently organized, the WMSC offers you young professional women—holders of a baccalaureate degree and a certificate in the specialty—original commissions as Second Lieutenants and an opportunity for a wide clinical practice rarely found in civilian pursuits.
And a happy personal life in the WMSC is assured by the many unique benefits you receive—officer's status, pay and allowances; travel; free medical and dental care; social life and recreational facilities; post-graduate study; retirement pay.
Try this modern magic key!
Write to Surgeon General, U. S. Army
or Surgeon General, U. S. Air Force
Washington 25, D. C.
for full information
Women's
Medical
Specialist
Corps

Can Be Your Friend—If." Elizabeth Perry, A.D.A. President, spoke on "Association Affairs" Friday afternoon. Instead of the traditional banquet, a buffet supper was served. The Reverend Harvey C. Hahn, Dayton, talked on the need for willingly and effectively assuming the responsibilities of the profession.

Papers presented at the Saturday morning session were: "Some Experimental and Theoretical Aspects of Taste" by Konrad L. Kraft, Ohio State University; "The Influence of Nutrition on the Response to Infectious Agents" by Dr. L. H. Schmidt, Director of Research, Christ Hospital, Cincinnati. Bleecker Marquette, Executive Director, Cincinnati Public Health Federation, spoke at a luncheon on "How You Can Help Promote Community Health." Workshop sessions concluded the Saturday afternoon program. New officers of the Ohio Association, who will take office November 1, are: President, Mary Letherman, Mt. Carmel Hosiptal, Columbus; President-Elect, Frances Krone, Cincinnati General Hospital; Vice-President, Madge Myers, University Hospital, Columbus; Treasurer, Inistore Simms, Northside Youngstown Hospital, Youngstown; and Secretary, Margery Brock Hale, Ohio State University, Columbus.

The Cincinnati Association has awarded $25 to the winner of their essay contest, "Why I Would Like To Be a Dietitian" for junior and senior high school girls.

The January meeting of the *Columbus Dietetic Association* featured Helen Lakin, owner of a catering service and pastry shop called "Ilonka's." Mrs. Lakin decorated a doll cake for the group. At the February meeting, Dorothy Permar at the Ohio State University Dental School told of current dental research in her talk, "New Facts about Tooth Decay." . . . St. Mary of the Springs is presenting a series of "Career Talks" to introduce freshman students to home economics. At one of the recent classes, Alice Rheinheimer spoke on Food Production Management in Commercial Establishments." Rosemary Kennelly, Assistant Dietitian at Mt. Carmel Hospital, spoke on "Different Phases of Work of the Hospital Dietitian."

The *Dayton Dietetic Association* saw a movie about the oxidation of vitamin B at a meeting held at the Veterans Administration Hospital on March 14. Mary Irene Hageman, Chairman of the Public Relations Committee, has recently participated in a career conference at a local high school. She spoke to the girls about a traveling career for a dietitian.

The *Toledo Association* awarded a $75 scholarship to the winner of their essay contest, "My Future in Home Economics" for high school seniors.

Pennsylvania Dietetic Association. Dr. Walter L. Obold, Professor of Biological Science at Drexel Institute, discussed "Food Handling in Relation to Food Poisoning" at the March 14 meeting of the *Philadelphia Dietetic Association*. A film "Dishwashing Dividends" was also shown. "Food Cost Control" was the subject discussed by James E. McNamara, Horwath and Horwath, Accountants, at the April meeting. The Diet Therapy Section of the Association planned an exhibit to be shown at the Metabolic Association meeting on diabetes and at a meeting of the Philadelphia County Medical Society during the week of April 10.

Texas Dietetic Association. Two hundred dietitians and guests attended the annual spring meeting of the Texas Dietetic Association in Dallas on April 14 and 15. Margaret L. Ross, Professional Activities Director of A.D.A., spoke at the initial business session. Julie Bennell, of radio station WFAA, entertained at a luncheon on the subject, "Career Women." At the afternoon session, scientific lectures were given by four Dallas physicians. Patricia Harvey of London, England, spoke at the banquet. Talks on personnel relationships and food cost control were given on the second day. Exhibits of institutional equipment, attractively labeled cans, novel plastic dishes, and tasty food demonstrations were also shown at the meeting.

Officers elected for 1950–51 are: Loucille Langham Taylor, President; Loie L. Davis, President-Elect; Lola Beatty, Vice-President; Margaret Sartor, Secretary; and Isabel H. Hamilton, Treasurer.

Association Activities

Representatives to Meetings. Winifred H. Erickson, A.D.A.'s Treasurer, attended the meeting of the North Dakota Dietetic Association in Grand Forks on May 10.

Our representative to the Conference on FAO for Non-Governmental Groups was Anne Stewart Miller. The meeting was held in Washington, D. C. on April 21.

A.D.A. has accepted an invitation to membership on the Advisory Council on Participation of National Organizations, one of the four major official advisory councils to the National Committee for the Midcentury White House Conference on Children and Youth. A meeting of this council will be held in Washington, May 25 and 26, with Dr. Ercel S. Eppright as our representative. Members of the A.D.A. committee include Dr. Eppright as chairman, Dr. Miriam Lowenberg, and Eva N. Ylvisaker.

Inauguration at Salem College. The Association was invited to send a representative to the inauguration of Dale Hartzler Gramley as thirteenth President of Salem Academy and College, Winston-Salem, North Carolina. Delilah H. Siler, President of the North Carolina Dietetic Association, attended the ceremonies which were held on April 22. Salem Academy was founded one hundred and seventy-eight years ago by a small band of Moravians; it was the first girls' school in the South. The Academy was incorporated as a college in 1866. The inauguration program contains a brief history of the school and mentions dietetics as one of the fields of work offered.

HANSON
DIETETIC SCALE
The standard diet scale of the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate.
Capacity 500 grams by grams. Stainless steel platform, white enamel body, easy to keep clean.
Model 1411 (illustrated) has glass protected dial, price $15.00
Model 1440 enamel dial, price $10.00
See your Supply House

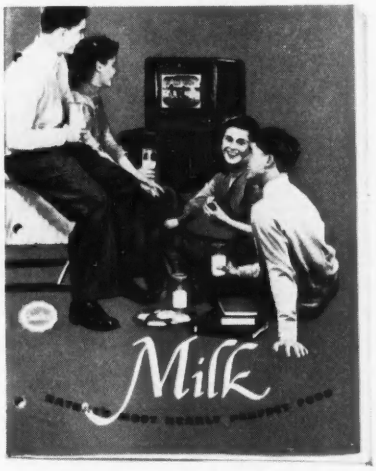
HANSON SCALE CO.
Est. 1888
525 North Ada St., Chicago 22, Ill.

FREE—*Send for these helpful new booklets—by*

Sealtest DAIRY PRODUCTS

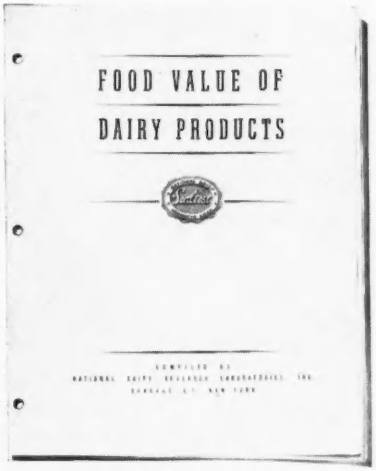
Beautifully color-photographed pieces, full of ideas on service, color arrangement, garnishing tricks, budget-wise menus, tempting nutritious recipes!

Facts on milk! Authoritative scientific charts, with nutritive values clearly indicated! Write Sealtest Consumer Service, 230 Park Avenue, New York 17, N. Y.

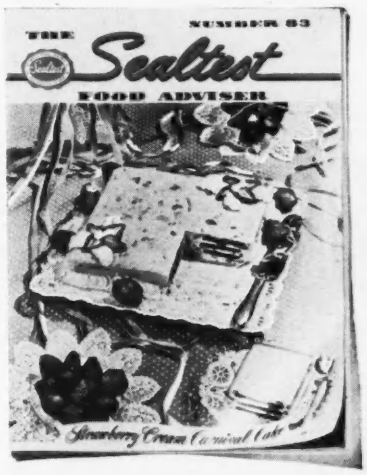


A brand-new 24-page booklet for teachers and dietitians only. Colorful, well written, it gives interesting milk facts, is packed with authoritative information.

An appetite-rousing collection of ice cream desserts—easy to make, money-wise, healthful! Help make any meal you plan more glamorous!



Easy-to-read charts on exact amounts of nutrients of dairy products. Given by portions and percentages! Wonderful help in figuring special diets!



Scientifically planned, laboratory-developed menus and dairy recipes for every type of meal—whether budget-based or party-paced!

Buy the best—buy Sealtest

Committee on Dietary Studies. The Association's Committee on Dietary Studies held a conference in Detroit, March 3 and 4. Dr. Icie Macy Hoobler, Chairman, has reported that an enormous amount of work has been outlined for the committee. The possibility of a panel discussion by the committee members at the annual meeting in Washington, D. C., is being considered.

A.D.A.'s Graduate Loan Fund. In honor of the late Phyllis Dawson Rowe, the Maryland Dietetic Association has contributed a gift of $100 to become a part of the Association's graduate loan fund.

An opportunity to contribute to the graduate loan fund was offered to all members of A.D.A. early in May through an announcement included in the general mailing to members. As a result of this announcement, a number of contributions have been received.

M. Faith McAuley Loan Fund. Twelve hundred dollars has been received by A.D.A. from the Illinois Dietetic Association for the establishment of the M. Faith McAuley Loan Fund for Graduate Students in Food Administration. This loan fund is sponsored by the Illinois Association, and administered by A.D.A. It is a fitting memorial to a woman who was active in association affairs, both nationally and locally.

Gift for Vocational Guidance. The Wisconsin Dietetic Association, realizing the importance of a long-range vocational guidance program, has contributed $50 to the Association's vocational guidance program.

"Are You Interested in a Quick Review?" This was the title of a questionnaire sent out to all A.D.A. members early in May. Members interested in workshops, refresher courses, and institutes were asked to show their interest by answering pertinent questions on this subject. Within the first week after the mailing was sent out, 223 replies were received. A constructive program should result from the information gained in this manner.

Loan Library Committee Activities. During March and April the A.D.A. Loan Library Committee met several times. Old periodicals were scrutinized for their worth, and informative articles were clipped for the library files. Old journals of the various professional associations which were not to be saved for binding were sold to the H. W. Wilson Company.

American Medical Association Convention. In cooperation with the U. S. Public Health Service and the American Diabetes Association, A.D.A. is presenting an exhibit at the American Medical Association Convention, to be held in San Francisco, June 26 through 30. The theme of the exhibit is "Teaching the Diabetic Patient." Basic teaching frames covering the medical, nutritional, and nursing aspects of diabetes will be selected from a series of film strips. Representatives of each of the sponsoring associations will be on hand to supply further information. The members of the Bay Section, California Dietetic Association, will assist with the exhibit.

Publicity for the Profession. As a result of the study made by the Bureau of Labor Statistics on dietitians, releases have been sent out by the Department of Labor. These releases have given statistics emphasizing the shortage of dietitians. Some of this material has been reproduced in college and university newspapers. The Ohio State University *Lantern* for April 25, carried an attention-getting article of this nature. The April issue of *Food Industries* also carried a statement of the need for more dietitians, as released by the U. S. Employment Security Bureau.

Brookings Institution Study. A study is being made by the Brookings Institution of the availability of medical service in the U. S. As a result, a request was received by the Association to supply information on the number of dietitians and their distribution in the U. S. These data and other material on the training and activities of dietitians were sent.

A.D.A. Seal in Library. A request has been received from the Milwaukee Public Library for an exact replica of the A.D.A. seal. The library is remodeling its Science and Industry Department and is planning to decorate the walls of the room with a border consisting of the emblems of the more important national and local scientific and technical societies.

Vocational Guidance Material. The U. S. Civil Service Commission is preparing a pamphlet to be called "The Dietitian in the Federal Service." In this connection, A.D.A. has been requested to supply the Commission with its own vocational guidance literature, to help in the preparation of the pamphlet.

News of Advertisers and Exhibitors

The Research and Amino Divisions of *International Minerals & Chemical Corporation*, has issued a booklet, "The Present Nutritional Status of Glutamic Acid," summarizing research on the medical uses of glutamic acid. The twenty-page color booklet is intended as a reference handbook for physicians.

Small steamers containing one and two compartments are now being manufactured by *The Cleveland Range Co.* for use with direct connection to building steam or with gas or electricity. Both hand controlled models and automatic electric styles are being made for counter or table use, or furnished with bases.

The Birds Eye-Snider Division of *General Foods* has three new packing plant facilities in Waseca, Mapleton, and Madelia, Minnesota. The new plants will be used chiefly for processing Birds Eye quick-frozen peas.

COOK FOOD
better...
in
MARKET FORGE
STEAM COOKERS
First choice with establishments that serve outstanding meals economically, Market Forge Steam Cookers can help *you* improve food and service. Tastier meals, faster cooking and savings in preparation costs are the profit advantages of cooking with these quality steam cookers.
They save time and labor by eliminating the handling of heavy cooking vessels. Waste and shrinkage costs are cut. There is never any burned food.
Above all, Market Forge Steam Cookers do the *kind of cooking that increases business.* By practically cooking to order, you can always serve meals while they are *fresh* and *hot.*
Insist on Market Forge Steam Cookers for cooking the delicious meals that result in greater customer satisfaction . . . for far less cost and labor in your kitchen.
Market Forge Steam Cookers are available for connection to a direct steam line, or for gas and electricity if steam line is not available. Easy to handle and service. Free floating inner door, removable for cleaning. One-piece gasket easily and quickly replaced. One-piece shelves. Automatic safety valve and steam gauge.
Write today for full details.
Model 3M
Model 2MG
Market Forge Company
EVERETT 49, MASSACHUSETTS